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29

Master Planning Report to Congress

Federal Emergency Management Agency

Master Planning Report to Congress

A Report Submitted to the Congress

by the

FEDERAL EMERGENCY MANAGEMENT AGENCY
U.S. Fire Administration
Washington, D.C. 20472

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Federal Emergency Management Agency
Washington D.C. 20472

TO THE READER

Fire is the single most costly disaster to strike American communities. It causes 20 times as many deaths and 12 times as many dollars in property loss as all other disasters combined.

The United States has the highest fire death rate in the world. It also has the finest fire suppression equipment and best trained firefighters in the world.

What it needs is a new emphasis on fire prevention. America must eliminate the causes of most fires. The job of the Federal Emergency Management Agency is to propel this effort forward to educate the public, train fire professionals, and gather the data to analyze fire problems and trends.

Master Planning helps Federal, State, and local officials and other key planners to fit the hazard fire into the spectrum of other major hazards faced by a community. It provides a framework within which all civil emergency professionals can work to support, and complement, the nation's fire departments. The Master Plan, with its comprehensive approach, provides an effective fire and emergency response without an undue demand on the nation's taxpayers.

Louis O. Giuffrida
Director
Federal Emergency Management Agency

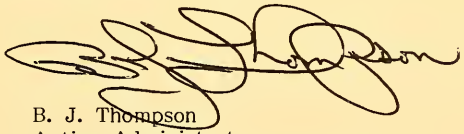
Federal Emergency Management Agency
Washington D.C. 20472

REPORT TO CONGRESS

Scarce resources coupled with a need for increased emergency response capabilities at the local level are forcing many communities to do a better job of planning for and managing their public safety programs. Many communities surveyed for this report indicate that Fire and Emergency Master Planning is essential if these new emergency response needs are to be addressed cost-effectively.

The fire service in our country has evolved into one of the best equipped and trained fire suppression forces in the world. However, the emergency management problems which communities face today have expanded the fire department's responsibilities far beyond that of fire suppression. Code enforcement, fire investigation, public education, emergency medical services, and response to a variety of emergencies--ranging from hazardous material spills to floods to radiological incidents are typical services provided to communities by the fire department. The fire department represents the largest manpower resource available to respond to and mitigate local emergencies and disasters. Good management dictates the efficient use of this valuable resource.

Implementation of recommendations proposed in this report will do much to improve local emergency response capabilities. The USFA is committed to assisting communities in meeting these new emergency management challenges and to making the fire department a well-trained and effective "First Responder" to a range of local emergencies and disasters.



B. J. Thompson
Acting Administrator
United States Fire Administration

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ACKNOWLEDGEMENTS

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PREFACE

In recognition of the potential of fire protection Master Planning and of the need for an evaluation of the applicability of the Master Planning process to other emergency management needs, the Committee on Science and Technology, U.S. House of Representatives directed the United States Fire Administration (USFA) to prepare a report on the status of Master Planning. In addition, the Committee recommended that USFA design a statistically sound pilot study "to validate the most effective tools, techniques, and consultative assistance; and to evaluate the effectiveness of Master Planning in relation to the material and financial assistance provided in the pilot program."

In response to the Committee's request, this report describes Master Planning's development, and documents its use by communities to reduce fire costs through improved fire and emergency management. An analysis of the components of existing Community Master Plans illustrates the feasibility and benefits of comprehensive fire and emergency response planning.

Based on the experiences of and recommendations from communities already using Master Planning, a Federal assistance program has been proposed which includes:

- Technical assistance in process management
- Model programs and resource materials for fire and emergency management
- Statistical evaluation of program effectiveness

The proposed program will increase the ability of local communities to select and use available technology in reducing fire costs through Community Master Planning. Additionally, by delivering fire and emergency response research and technical options to communities, the Master Planning Assistance Program can improve the cost-effectiveness of other FEMA programs and initiatives.

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Managing the Cost of Fire Through Master Planning-an Overview

I. MANAGING THE COST OF FIRE THROUGH MASTER PLANNING - AN OVERVIEW

The cost of fire in the United States has been estimated at over $20 billion annually (see Figure 1). Fire costs include not only direct property losses—equal to $4.6 billion annually--but also the costs associated with fire protection. In direct costs, fire results in a dollar loss 12 times greater--and a death rate 20 times greater--than all other national disasters combined. Community Master Planning can help to reduce the costs of fires by means of more cost-effective fire and emergency management.

COMMUNITIES MANAGE FIRE AND EMERGENCY RESOURCES

Most fire protection costs are borne by local communities. In 1977, United States cities spent an average of $26.00 per capita for fire protection. In the past, most of these resources were allocated to fire suppression. Communities now are shifting some of these resources into fire prevention and emergency response, and are beginning to recognize the importance of improved management systems. The cost-effective allocation of fire protection resources is a major problem facing communities today.

Local Needs Influence Allocation of Resources

Changes in community needs, limited fiscal resources, and new technology are forcing communities to reassess the way in which fire protection dollars are allocated. Many communities today are demanding new and expanded services--such as emergency response capabilities--from their fire departments. It is estimated that fire departments deliver 70 percent of pre-hospital emergency care in the United States. Also, recent research has resulted in new technology for fire detection, and studies indicate that an increased emphasis on fire prevention can reduce fire costs and losses substantially. Finally, many municipal budgets are being drastically cut, as citizens revolt against continually increasing taxes; fire departments, as well as other municipal agencies, are being asked to do more for less. These factors necessitate both changes in the balance between suppression, prevention, and emergency response services provided to communities as well as better coordination of existing municipal programs. Communities must take a more systematic approach to allocating resources and to determining the best mix of fire and emergency response programs.

Federal Programs Offer New Technology but Limited Assistance

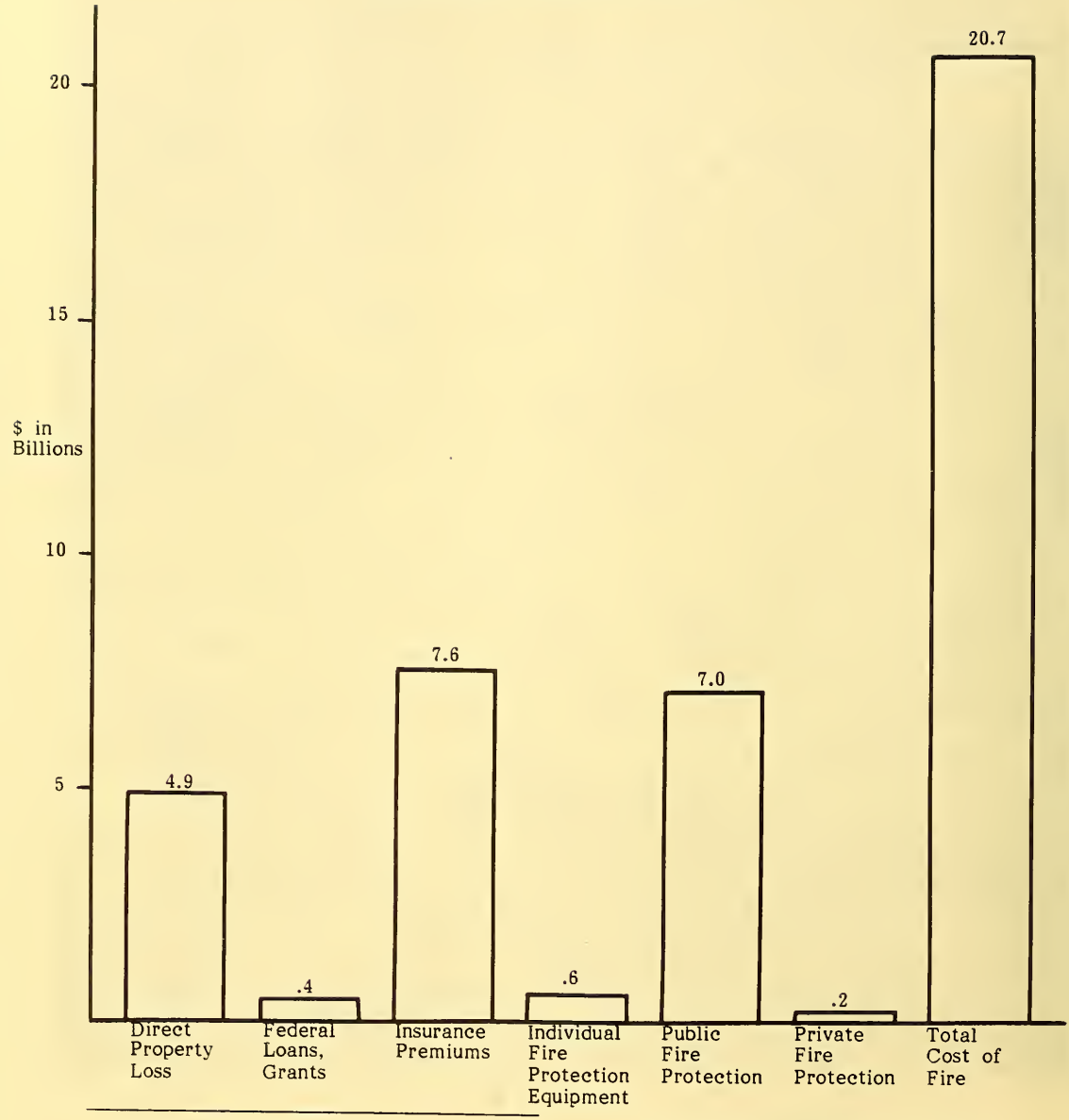
At least 18 Federal agencies conduct research, promulgate standards, and develop technology which have the potential for reducing the cost of fire and fire protection. Over the past decade, research has yielded new automatic detection and suppression systems, fire and disaster resistant building construction techniques, improved equipment for fire suppression and firefighter safety, and strategies for managing the delivery of fire and emergency services. Many new fire and emergency programs now are available to communities seeking to reduce their fire costs.

Photo Credit - America Burning - The National Commission on Fire Prevention and Control

Communities must take a more systematic approach to allocating resources and to determining the best mix of fire and emergency response programs.

FIGURE 1

ESTIMATED PRESENT AVERAGE
ANNUAL COST OF FIRE IN THE U.S.



*National Fire Data Center, U.S. Fire Administration, Federal Emergency Management Agency, FIRE IN THE UNITED STATES (Washington, D.C., Government Printing Office, 1978), p. 157.

Photo Credit - FEMA/USFA

Local communities have been painfully slow in adopting new fire protection technology and strategies. In order for technology to reduce fire losses and fire protection costs, it must be implemented at the local level.

While many Federal programs are engaged in the development of fire protection technology, few provide assistance to communities in the selection and use of appropriate technical options. Local communities have been painfully slow in adopting new fire protection technology and strategies. In order for technology to reduce fire losses and fire protection costs, it must be implemented at the local level. Many communities simply don't know which options would be most effective. Communities need assistance in evaluating the many technical options available to them and in selecting those which are best suited to their particular needs and resources.

MASTER PLANNING IMPROVES RESOURCE UTILIZATION

The United States Fire Administration (USFA) was established in 1974 to serve as a focal point for all Federal fire prevention and control activities, and was given the responsibility for helping communities to better utilize available fire protection resources. In Public Law 93-498, Section 10, USFA was directed to encourage and assist communities in fire prevention and control Master Planning. Master Planning was seen as a mechanism for supporting the selection and implementation of local programs and techniques.

Community Fire Prevention and Control Master Planning was developed to serve as a tool for improving the cost effective delivery of fire and emergency services. Master Planning, by providing a systematic approach for evaluating the many technical options for fire prevention and control, encourages the adoption of new technology. The flexibility of the process allows the inclusion of programs which meet developing local needs, such as emergency response. The involvement of both the public and the private sectors in the decision making process ensures that the program mix which is selected will reflect the local needs and make optimum use of available resources.

Experience with communities which have used the Master Planning process to develop and implement fire and emergency response plans indicates that it can reduce the cost of fire and improve community fire and emergency management. Research, development, and field testing now are complete and Master Planning is ready for dissemination to communities across the nation.

DELIVERY OF MASTER PLANNING TO COMMUNITIES

A phased three-year program is proposed to disseminate the Master Planning process nationwide and to monitor its effectiveness in reducing fire and emergency response costs and losses. The proposed program will include the development of model programs which incorporate new technology for fire and emergency management, tools to facilitate local use of the Master Planning process, and technical assistance from state and local personnel involved previously in Master Planning.

The project plan, as proposed, would include an experimental design to facilitate monitoring and evaluation of experience of communities involved, in order to determine the effectiveness of comprehensive Master Planning in reducing fire costs through the coordinated use of resources, the implementation of state-of-the-art technology and innovative approaches, and improved fire and emergency management.

THIS REPORT TO CONGRESS

In response to a directive by the Committee on Science and Technology to USFA, this report will:

- Describe the Master Planning process: how it was developed, and how it relates to other Federal fire and emergency management initiatives (Chapter II).
- Document the experience of communities which have developed Master Plans—including community characteristics, options addressed in Master Plans, Master Planning effectiveness, and local needs for assistance (Chapter III).
- Define an appropriate Federal program for stimulating the use of this effective management tool at the local level (Chapter IV).

Photo Credit - FEMA/USFA

Fire protection master planning was developed to serve as a tool for improving the cost-effective delivery of local fire and emergency services within realistic constraints of needs and budgets.

Description of Community Master Planning

II. DESCRIPTION OF COMMUNITY MASTER PLANNING

THE MASTER PLANNING PROCESS

Master Planning is a process to increase the effectiveness of communities in dealing with fire and emergency management by combining the use of technical analysis with community involvement in the decision making process. The Master Planning process provides a systematic approach to evaluating and selecting technical options that will best meet a community's fire and emergency management needs, given the available resources, and involves community leaders in making fire and emergency management decisions.

Tool for Analysis of Options

Master Planning uses available data to determine community fire and emergency response needs, provides a structure for identifying and analyzing the options for meeting those needs, evaluates the identified options, and yields a management plan for the implementation of a comprehensive fire and emergency response program.

- Analyze data - Early in the Master Planning process, data on fire incidence and losses, location of fire stations, available water flow, community growth patterns, population density, age and construction of buildings, and personnel and fiscal resources are collected and analyzed. This information is used to identify fire and emergency response needs and priorities. Reasonable program objectives then are developed to meet these needs.

- Identify options - The next step in the Master Planning process is to identify and to review the options for meeting the program objectives formulated in the previous task. Communities presently prevent and control fire losses, and improve emergency management through the implementation or improvement of programs in four areas—fire prevention, fire suppression, emergency response, and program administration. Each of these program areas consists of several component parts. For example, fire prevention has four major components: legislation of codes and standards, enforcement of codes through inspections, education of the public and private sectors, and the prevention and control of intentionally set (arson) fires. For each of the program components there are a number of options. For example, within "legislation of codes and standards," a community may consider these options: smoke detector legislation for early detection, sprinkler legislation for early extinguishment, and other building specifications designed to reduce the probability of ignition or the spread of fire. Fire and emergency management program areas and their components are shown in Figure 2. Figure 3 lists some of the options within each program component.

  As community needs change, the number of program areas, components, and options to be considered increases. For example, the Emergency Response program area was added because of communities' need for

FIGURE 2

FIRE AND EMERGENCY MANAGEMENT PROGRAM AREAS

PREVENTION: Preventing or reducing the severity of a fire or emergency situation by changing the environment or human behavior	SUPPRESSION: Minimizing property and life-loss through confining and extinguishing fires	EMERGENCY RESPONSE: Minimizing life and property loss through rapid response to and management of emergencies	ADMINISTRATION: Improving the delivery of prevention, suppression, and emergency response programs through efficient management and use of personnel and fiscal resources
Prevention Components: • Legislation (codes & standards) • Enforcement (inspection & plans review) • Public education • Arson prevention and control	Suppression Components: • Staffing strategies • Fire station location • Water supply	Emergency Response Components: • Emergency medical services • Hazardous materials • Disaster preparedness	Administrative Components: • Data collection and analysis • Financing • Communications • Personnel management (training, equipment, physical fitness) • Systems management

FIGURE 3

OPTIONS FOR FIRE AND EMERGENCY MANAGEMENT DELIVERY SYSTEMS

PREVENTION

Legislation:
1. Smoke detectors
2. Sprinkler systems
3. Improved building fire safety design

Code Enforcement:
1. Comprehensive inspection program
2. Targeted "high risk" inspections
3. Non-residential inspections

Public Education:
1. Comprehensive—community wide
2. Targeted to "high risk" population
3. Combined—general media and personal follow-up

Arson Prevention and Control:
1. Management—arson task force
2. Economic incentives
3. Behavioral modification
4. Investigation and prosecution

SUPPRESSION

Company Staffing and Organization:
1. Company staffing levels
2. Organization—paid, part paid, or volunteer
3. Public safety/use of other municipal personnel

Station Location:
1. Increase number of station facilities
2. Abandon stations
3. Relocate or consolidate stations

Water Supply:
1. Municipal water system
2. Water tankers
3. Lakes/natural water sources

EMERGENCY RESPONSE

Emergency Medical Programs:
1. Paramedic services
2. Emergency medical services
3. First Aid—treatment of burn victims

Hazardous Materials:
1. Regulation of transportation and storage
2. Hazardous material process regulation
3. Hazardous material emergency plan

Civil Preparedness:
1. Civil defense disaster plan
2. Community disaster plan
3. Public safety disaster plan
4. Fire department disaster plan

ADMINISTRATION

Data Collection and Analysis:
1. Manual system
2. Computerized system
3. Survey instruments
4. Quasi-experimental designs

Financial Structure:
1. Jurisdictional financing
2. Private contracting
3. Subscription fire departments
4. Special tax districts

Management Systems:
1. Systems management (MBO)
2. Budgeting structure (PPB/ZBB)
3. Communications
4. Personnel management (EEO, management development, training equipment, physical fitness)

Photo Credit - FEMA/USFA

Community involvement is the key to the success of Master Planning.

emergency medical service and hazardous materials management. Likewise, the development of improved protective gear for firefighters gives fire departments a new option for improving personnel management. Master Planning allows for the systematic review of the numerous options for fire and emergency management.

- Evaluate options - The identified options then must be evaluated in light of the community's needs and resources. Obviously, it would not be cost-effective for a community to put equal emphasis on all options in all four areas. Since resources are limited, there must be a judicious selection among the alternatives. The cost and feasibility of each option is considered systematically within the context of community needs and resources. A determination is made as to whether the private or the public sectors should bear the cost of a given option, and an attempt is made to balance public and private fire protection costs, thus all available resources for fire and emergency management are considered in choosing the most cost-effective system.

- Propose program - From the analysis of the available options for meeting fire and emergency management objectives, a "best combination" of options is selected. These options, plus an implementation strategy, form the community's Master Plan. The Master Plan then becomes the management document which guides the implementation and evaluation of fire and emergency response programs.

Community Involvement

Community involvement is the key to the success of Master Planning. Plans developed without input from those responsible for implementation or from those receiving and paying for the services or planned programs seldom are implemented successfully. Community Master Planning requires the involvement of both those who provide and those who receive community fire and emergency services.

- Planning team - Service providers serve on a planning team which is established soon after a community initiates Master Planning. In addition to the city manager/administrator and fire department officials, the planning team includes representatives of other community departments (such as public works, codes, civil defense, water, health, building, and legal) which provide services related to fire protection and emergency response (see Figure 4). These individuals having first-hand knowledge of and experience with existing city programs, can evaluate the technical options in terms of local realities. Their involvement at the planning stage results in the better use of local fire and emergency management resources through improved program coordination.

- Advisory committee - To involve service receivers in the decision making process, an advisory committee is established, made up primarily of those who will be affected most by the Master Plan's recommended programs (see Figure 5). The representatives of the private sector, business, industry, and insurance, who serve on the advisory committee are responsible for establishing the community's overall fire goals, and for the final approval of the plan developed to meet those goals. The existence of the advisory committee assures that those who will receive (and pay for) the services have a voice in selecting the "best mix" of fire and emergency management options for their community.

FIGURE 4

TYPICAL MASTER

PLANNING TEAM MEMBERSHIP

- City administrative office representative
- Fire department representative
- Building department representative
- Planning department representative
- Water department representative
- Employee organizations (e.g., IAFF, municipal workers association, etc.) representatives

FIGURE 5

TYPICAL MASTER PLANNING

ADVISORY COMMITTEE MEMBERSHIP

- City administrative office representative
- Fire department representative
- Building department representative
- Planning department representative
- Water department representative
- Employee organizations (e.g., IAFF, municipal workers association, etc.) representatives
- Citizen groups (e.g., Rotary, Lions, Kiwanis) representatives
- Industry groups (e.g., Chamber of Commerce) representatives
- Educators (e.g., public/private schools, colleges, universities) representatives
- Other organizations (special councils and commissions, media) representatives

A Three Phase Program

Master Planning has three major phases and 11 steps within these phases (see Figure 6). The entire process, from community commitment to implementation, takes from two to three years.

- Pre-Planning - In Phase I, the community recognizes the need for better fire and emergency service management, commits personnel and resources to plan development, and identifies and recruits those who will serve on the planning team and the advisory committee.

- Plan Development - During Phase II, data and existing resources are analyzed, options are reviewed, and a fire and emergency services management plan is developed. Most of this work is accomplished by the planning team. The involvement of the advisory committee at this stage varies from community to community.

- Plan Implementation and Evaluation - In Phase III, the plan developed in Phase II is presented to the advisory committee for its recommendations and approval. The implementation of programs within the approved Master Plan does not end the process, however. Periodic review, evaluation, and revision of the Master Plan are an important part of Master Planning.

HISTORY OF USFA'S MASTER PLANNING PROGRAM

USFA's Master Planning Program has evolved through two major stages:

- Development and validation of the Master Planning process and basic materials

- Design and pilot implementation of Master Planning technical assistance and training programs.

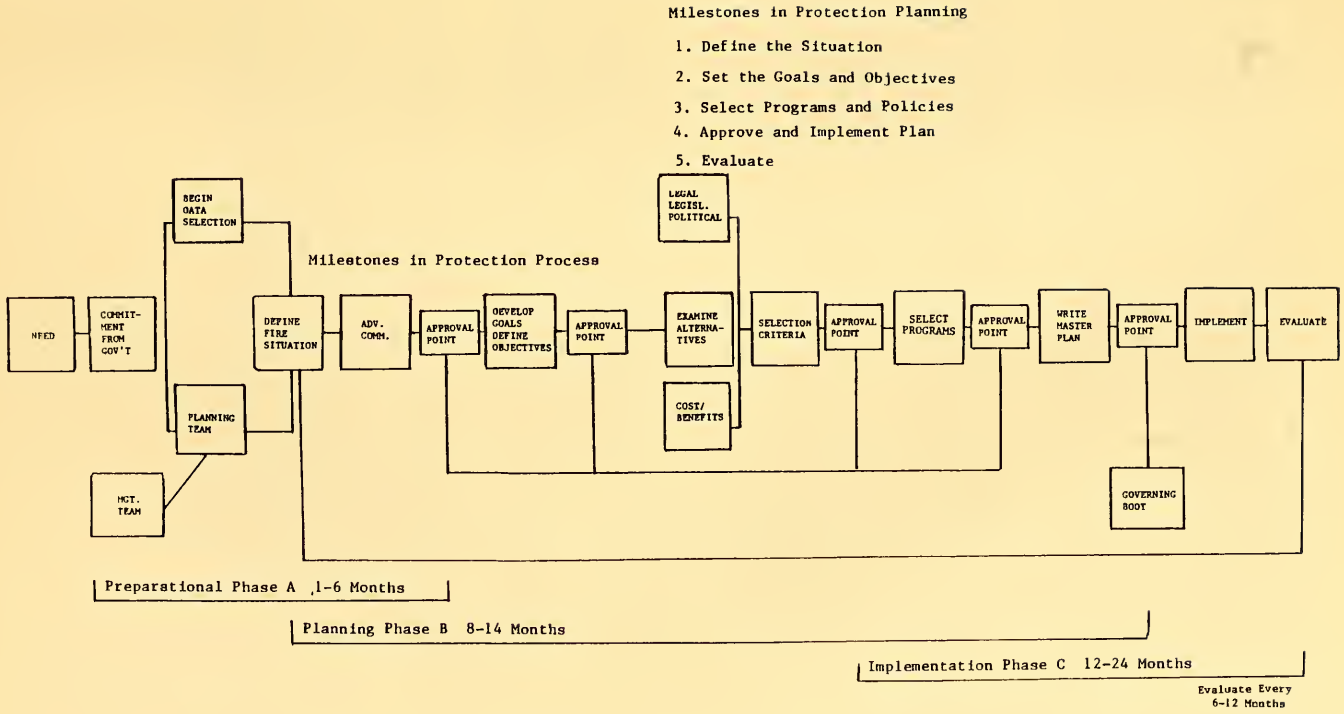
Sufficient experience and documentation now have been accumulated to recommend implementation of the program nationwide. (For a listing of major master planning program milestones, see Appendix A.)

Development and Validation of the Master Planning Process

The need to provide states and communities with assistance in evaluating fire protection options and in selecting those most suitable was recognized at the time the USFA was established. Public Law 93-498 directed USFA to stimulate and support the development of fire prevention and control Master Planning at the state and local levels. A field-useable process was developed and basic materials were prepared to enable communities to validate the feasibility and effectiveness of the Master Planning process. Results of research concerning the development and use of the Master Planning process were summarized in an October 1978 Report to Congress. Additional detail on the development and validation phase follows:

FIGURE 6

THE PLANNING PROCESS



- Master Planning Guides - USFA's Master Planning Program began in 1974 with the development and field testing of the Master Planning process. Thirteen communities participated in the validation of the Urban Guide to Fire Protection Master Planning. A simplified Basic Guide to Fire Protection Master Planning was developed and validated in fourteen additional communities. In addition to these 27 validation communities, over 100 additional communities used the draft guides in developing their own Master Plans. During the validation phase, the communities were encouraged to work independently, with minimal support and assistance from USFA. Their experiences were documented and used in revising the guides.

- Master Planning Transferability - While the Master Planning guides were being developed and validated, the Master Planning process was being studied to determine its transferability to other communities and the feasibility of its potential use by specific fire service constituencies. An independent assessment of Master Planning transferability was conducted by the International City Management Association (ICMA). The ICMA study concluded that Master Planning is a needed and useable tool for use by local communities, and made a number of recommendations for facilitating the use of the Master Planning process. Master Planning for Public Fire Educators (1977), prepared for USFA's Public Education Office, outlined the manner in which public fire education specialists should be involved in community Master Planning. In this study, public education program planning was seen to be an integral part of comprehensive fire protection Master Planning.

- Multi-jurisdictional Master Planning - Experience in validating the Master Planning process indicates that counties and other multi-jurisdictional areas face some unique problems in Master Planning. A project to develop a supplementary Master Planning guide for multi-jurisdictional areas was initiated in 1978. This guide is scheduled for completion by the National Association of Counties (NACO) in spring 1980. The delivery of emergency medical services, specifically, is addressed in this guide.

- State Master Planning - The feasibility of Master Planning at the state level also has been considered, and in 1978 USFA established the Policy Development Assistance Program (PDAP) on a pilot basis. Four states (North Carolina, Oregon, Pennsylvania, and Washington) were awarded grants for the development of state fire protection Master Plans to prioritize and coordinate their fire prevention and control programs. The experiences of these four pilot states will be used to determine if fire protection Master Planning is viable at the state level. By January 1980, one state, Oregon, had successfully completed its plan and was moving toward implementation. A summary of Oregon's Master Plan is included in Appendix B.

- Master Planning Report to Congress - Experience and information gathered on fire protection Master Planning from 1975 to 1978 were compiled in a Report to Congress on Master Planning (October 1978). The submission of this Report concluded the development and validation stage of the Master Planning process.

Design and Pilot Implementation of Master Planning Technical Assistance and Training Programs

Experience gained during the development and validation stage of the Master Planning process was used to design technical assistance and training programs. The Office of Planning and Education (OPE) established a cadre of state and local persons having experience in Master Planning to deliver on-site technical assistance to Master Planning communities. Materials needed to help communities in developing Master Plans were identified, and development and field testing were initiated. The first course on Master Planning was developed and delivered by the National Fire Academy in January 1979. More detail on these initiatives follows:

- Personnel Base for Community Assistance - Local fire and planning personnel with hands-on experience in community Master Planning were identified and contracted with by USFA to provide a limited amount of on-site assistance to communities involved in Master Planning. Thirteen Technical Support Services (TSS) personnel currently are available through OPE to provide a limited number of communities with assistance in Master Planning (see Figure 7). As of January 1980, 24 communities had received 1604 hours of assistance in Master Planning. Reports from the TSS staff and from the communities receiving assistance are adding to USFA's documentation of Master Planning experience at the local level. These field personnel also are being used to suggest and draft the support materials needed by communities involved in Master Planning.

- Support Materials for Community Assistance - A slide program and a set of overhead transparencies which give an overview of the Master Planning process have been developed for use by TSS personnel with community leaders and planning team members. Maps and overlays which illustrate how available data can be used in the planning process were developed by TSS personnel for use with local planning team members. Other support materials have been requested by field personnel and will be developed as funding allows.

- National Fire Academy Master Planning Course - To further encourage Fire Protection Master Planning in local communities, the National Fire Academy (NFA) developed a course on Master Planning for delivery in the 1979 Cluster Program. One hundred twelve students were introduced to basic planning concepts in two-day courses delivered in San Francisco, California; New Haven, Connecticut; Atlanta, Georgia; and Minneapolis, Minnesota.

FIGURE 7

CURRENT TECHNICAL SUPPORT SERVICES CADRE

ARKANSAS	Chief Mickey Jackson Springdale Fire Department
	Dave Fornell Little Rock, Arkansas
	Kenneth D. Riley Director Northwest Arkansas Regional Planning Commission
CALIFORNIA	Captain Al Grams Covina Fire Department
	Richard Westfall Municipal Planner Ranchos Santa Fe Planning Association
CONNECTICUT	William Porter Former Director Connecticut Commission for Fire Prevention and Control
MARYLAND	Dr. Harry Hickey Fire Protection Engineering University of Maryland
NEBRASKA	Larry Wiles Nebraska Forest Service University of Nebraska
NORTH CAROLINA	Ken Farmer Executive Director North Carolina Fire Commission
OREGON	Larry Loar Fire Marshal Tualitin Fire Protection District
	Dick Small Director Fire Standards and Accreditation Board
TENNESSEE	Captain Robert A. Williams Seymour Volunteer Fire Department
TEXAS	Frederick W. Keithley Director of Human Services North Central Texas Council of Governments
WASHINGTON	G. Kenneth McAllister Former Deputy Chief Bellevue Fire Department

MASTER PLANNING AS IT RELATES TO OTHER FEDERAL PROGRAMS

The Federal government has a number of programs which address or relate to the four fire and emergency management areas included in Master Planning. These Federal agencies and their initiatives relevant to fire prevention, fire suppression, emergency response, and fire administration are summarized in Appendix C. These Federal programs fall into three general areas: research and development of technical solutions (options), development and enforcement of standards and regulations, and technical and financial programs assistance.

In many instances, the effectivenes of these Federal programs is dependent upon the intelligent local utilization of these technologies, approaches, and standards. In addition to reducing local fire costs, community Master Planning also can increase the cost-effectiveness of many Federal programs by improving the local application of Federal resources. Specifically, Master Planning improves the effectiveness of other Federal initiatives by helping communities to (1) select and implement the best combination of technical options for their needs and resources, (2) develop and implement fire and emergency response programs consistent with state and Federal regulations, and (3) use available state and Federal assistance to reduce fire costs and losses through improved fire and emergency management.

Implementation of Technology Resulting From Research

Agencies conducting basic research in the development of new or improved options for fire and emergency management include:

Department of Agriculture
Department of Commerce (NBS)
Department of Defense
Department of Housing and Urban Development
Department of Health & Human Services (HHS)
Federal Emergency Management Agency
National Aeronautics and Space Administration
National Science Foundation*
Veterans Administration

Research funded by these agencies yields many new technical options for fire and emergency management. This research, however, will result in reduced fire costs and losses only if local communities evaluate these options and implement those appropriate to their needs. USFA's experience in working with communities developing and implementing Master Plans indicates that Master Planning provides the needed link between the development of technological options and their ultimate selection and implementation.

Use of Federal Regulations, Codes, and Standards

Agencies with regulatory or standard-setting responsibilities related to fire and emergency management include:

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*Although not a Federal agency, NSF is very active in fire-related research.

Photo Credit - America Burning - The National Commission on Fire Prevention and Control

Master Planning, by allowing the consideration of many options, can facilitate local adoption of Federal standards and/or regulations.

Consumer Product Safety Commission (flammable fabrics and other consumer products)
Department of Housing and Urban Development (mobile homes)
Department of Human Resources (HHS) (hospitals and nursing homes)
Department of Justice (equal employment opportunity)
Department of Labor (occupational health and safety)
Department of Transportation (hazardous materials)
Department of Treasury (arson-explosives)
Federal Communications Commission (communications)
Federal Trade Commission (consumer goods, including plastics)
Nuclear Regulatory Commission (hazardous materials)

Federally developed standards often are mandatory only for federally subsidized buildings, programs, or products. Although regional building codes and voluntary standards may be adopted locally, the application of Federal codes and standards to the private sector could yield added benefits in terms of improved fire protection. Master Planning, by allowing the consideration of many options, can facilitate local adoption of Federal standards and/or regulations. Technical assistance in Master Planning also can raise the level of local awareness of existing state and Federal regulations which affect the communities' fire and emergency management planning.

Balance Between Federal Assistance Programs

The Federal Government provides assistance to states and communities in the implementation of a number of specific fire and emergency response programs. For example, communities may be eligible for assistance in areas as diverse as arson detection and investigation, wildland fire suppression, airport crash-fire-rescue, water supply system improvement, fire incident data collection, and public fire education program development. Agencies providing specific assistance include:

Department of Agriculture (fire prevention and control - forests and wild lands)
Department of Commerce (building codes and standards)
Department of Housing and Urban Development (resource utilization)
Department of Human Resources (EMS and training)
Department of the Interior (fire prevention and control - U.S. parks)
Department of Justice (arson)
Department of Transportation (hazardous materials and EMS)
Environmental Protection Agency (hazardous materials - pesticides)
Federal Emergency Management Agency (data, training, public education, disaster preparedness, disaster recovery, arson, EMS, communications)
National Transportation Safety Board (hazardous materials)

While assistance is available to communities in implementing specific programs, virtually no assistance is available from either the state or Federal governments in selecting the best combination of options. Master Planning provides this assistance, helping communities to select and implement a balanced fire and emergency response system to meet identified local needs.

Proposed Master Planning Assistance Program

III. EXPERIENCE OF MASTER PLANNING COMMUNITIES

This section of the report contains information from and documentation of communities which actually have used the Master Planning process in developing and implementing fire and emergency management plans. The document of Master Planning will provide insight into the ways in which theory (covered in Section II) translates into practice. Three areas will be discussed:

1. Characteristics - do community characteristics such as size, population density, type of government, and fire department organization affect the ability of a community to use the Master Planning process? How can the process be made more useable?

2. Components of Master Plans - which areas (prevention, suppression, emergency response, and administration) and their components actually were included in Master Plans? How can comprehensive planning be encouraged?

3. Benefits of Master Planning - how effective is Master Planning in improving the use of public and private resources and in implementing new technology to reduce fire costs? How can these benefits be extended to other communities?

COMMUNITIES SELECTED FOR STUDY

Figure 8 lists 90 planning jurisdictions with which USFA has had extended contact, including both the original Master Planning validation communities and communities currently receiving technical assistance from USFA in Master Plan development or implementation.

For this report, 47 communities were selected from this list for further study. They responded to OPE's request for additional information about their Master Planning experience (see Appendix D), and/or had submitted copies of their Master Plans to USFA.*

MASTER PLANNING COMMUNITY CHARACTERISTICS

Key Variables

Several key community variables, which might have affected the use or effectiveness of Master Planning in communities by influencing the quantity and quality of community involvement, were identified. These include population, land area, population density, type of city government, and type of fire department. Table 1 shows these five variables for the 47 planning jurisdictions studied.

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*It is recognized that these communities do not constitute a statistically valid sample. No funding has been provided for such a study. The data presented here are, however, the best available, and yield valuable anecdotal information about communities which successfully have used the Master Planning process.

FIGURE 8

SOURCES OF TECHNICAL ASSISTANCE FOR
THE NORTHWEST MISSOURI MASTER PLAN

Individuals

Tom Behrendsen
Agent
Missouri State Fire Marshal's Office
Liberty, Missouri

Bob Blackwood
Motorola Communications
Kansas City, Missouri

Rudy Broils
Insurance Services Office
St. Louis, Missouri

Jan Clifton
Missouri Boat Patrol
Mound City, Missouri

Kenneth Holland
Her Majesty's Chief Inspector
British Fire Service
London, England

David Hoover
Nodaway County Ambulance Service
Maryville, Missouri

Ron Lunde
Missouri Forestry Service
St. Joseph, Missouri

Robert Morrison
Missouri Fire Marshal
Jefferson City, Missouri

Bill Westhoff, Jr.
Fire Service Training
University of Missouri
Columbia, Missouri

Organizations

Environmental Protection Agency
Kansas City, Missouri

Missouri Firemans Association
P.O. Box #473
Columbia, Maryland

National Fire Safety and Research Office
U.S. Fire Administration
Washington, D.C.

Northwest Missouri State University
Maryville, Missouri

United States Coast Gaurd
St. Louis, Missouri

University of Missouri Extension Office
Maryville, Missouri

West Central Firemans Association
Kansas City, Missouri

TABLE 1

MASTER PLANNING COMMUNITY CHARACTERISTICS

COMMUNITY	POPULATION	LAND AREA (Sq. Mi.)	POPULATION DENSITY (Per Sq. Mi.)	TYPE OF GOVERNMENT		TYPE OF FIRE DEPARTMENT		
				Manager	Other	Paid	Part Paid Volunteer	Volunteer
Benton County, AR*	59,000	851	69		x		x	
Fayetteville, AR	31,915	18	1,773	x			x	
Jackson County, AR**	21,000	629	33		x		x	
Springdale, AR	19,962	20	998		x		x	
Azusa, CA**	27,000	7	3,857		x	x		
Covina, CA**	33,000	6	5,500	x		x		
Culver City, CA**	38,000	48	792	x		x		
El Monte, CA**	68,000	10	6,800	x		x		
Mountain View, CA**	55,000	6	9,167	x		x		
Palm Springs, CA**	27,000	74	365	x		x		
San Clemente, CA**	21,000	16	1,312	x			x	
Santa Ana, CA**	177,000	27	6,556	x		x		
Springlake, CA**	26,000	64	406		x		x	
West Covina, CA**	73,000	15	4,867	x		x		
Madeira Beach, FL**	5,000	1	5,000	x			x	
Miami, FL**	365,000	350	1,043	x		x		
Miami-Dade County, FL**	1,439,000	2,042	705	x		x		
Pasco County, FL**	127,000	742	171	x			x	
Pinellas County, FL**	644,000	265	2,430	x			x	
Springfield, IL**	95,148	42	2,265		x		x	
Princeton, MA**	3,500	26	97		x		x	
Northwest MO* (5 counties)	50,108	2,639	19		x			x
Washington Township, NJ**	22,000	22	1,000	x				x
Nassau County, NY**	1,403,000	264	5,314		x			x
Winston-Salem, NC**	150,000	62	2,419	x		x		

TABLE 1

MASTER PLANNING COMMUNITY CHARACTERISTICS (continued)

COMMUNITY	POPULATION	LAND AREA (Sq. Mi.)	POPULATION DENSITY (Per Sq. Mi.)	TYPE OF GOVERNMENT		TYPE OF FIRE DEPARTMENT		
				Manager	Other	Paid	Part Paid Volunteer	Volunteer
Ashtabula County, OH**	102,000	700	146		x		x	
South Charleston, OH**	2,000	40	50	x				x
Toledo, OH**	368,000	81	4,543	x		x		
Tulsa, OK**	347,600	175	1,986		x	x		
Tulsa-Creek County, OK* (2 counties)	466,000	1,509	309		x		x	
Salem, OR**	78,000	37	2,108	x		x		
Sandy, OR**	2,000	77	26		x		x	
Carlisle, PA**	19,000	6	3,167	x			x	
Coatesville, PA**	12,000	6	2,000	x			x	
Lower Macungie Twnsp., PA**	12,000	25	480		x			x
Middletown Township, PA**	13,000	13	928	x				x
Wescosville, PA**	2,000	25	80		x			x
Williamsburg, PA**	2,000	40	50		x			x
Greenwood, SC**	25,000	13	1,923	x		x		
McCormick County, SC**	8,000	360	22		x			x
Waccamaw Region, SC* (3 counties)	158,000	2,901	54		x		x	
Alamo Region, TX* (11 counties)	1,097,000	10,592	104		x		x	
Denison, TX**	28,000	12	1,833	x		x		
Richardson, TX**	61,420	28	2,333	x		x		
Orem, UT**	36,000	16	2,250	x		x		
Virginia Beach, VA**	230,000	310	742	x			x	
Bellevue, WA**	65,000	27	2,407	x			x	

* Indicates multi-jurisdictional planning

** Master Planning communities surveyed by U.S. Fire Administration

- Community Size - Planning jurisdictions which successfully completed Master Plans varied in population from 2,000 (South Charleston, S.C.; Sandy, Ore.; Wescosville, Pa.; and Williamsburg, Pa.), to 1,439,000 (Miami-Dade County, Fla.); and in land areas from one square mile (Madeira Beach, Fla.) to 10,592 square miles (Alamo Region, Tex.). Both rural and urban areas were represented in the 47 planning jurisdictions studies; several planning jurisdictions, especially those encompassing more than one county, included both rural and urban areas.

  Relatively small urbanized communities were over-represented. Thirty of the 47 planning jurisdictions had populations under 75,000. Seven of these jurisdictions clearly are rural. Three others (Northwest, Mo.; Waccamac Region, S.C.; and Alamo Region, Tex.) were multi-jurisdictional areas having both rural and urban segments. The remaining 20 communities primarily were small urban or suburban communities.

The relatively large number of small urbanized communities may indicate that existing Master Planning materials are more applicable to communities of this type. Feedback from technical assistance personnel and Master Planning communities supports this hypothesis, and indicates that very small and very large communities have unique Master Planning needs which, in turn, could influence the number of communities having completed plans.

- Municipal Administration - There are two primary forms of municipal administration: elected (mayor or council), and appointed (city manager). Both forms of city administration are represented in the 47 Master Planning jurisdictions. The majority (28) of the communities have the city manager form of government.

- Fire Department Organization - Community fire protection usually is delivered either by full-time career fire department personnel or by volunteer (or paid-on-call) personnel. The Master Plans reviewed included jurisdictions with fully paid (career) fire departments (19), all-volunteer fire departments (9), and fire departments with a combination of career and volunteer personnel (19). The limited number of all-volunteer departments may indicate that communities served by all or primarily volunteer departments may have special needs for planning assistance.

Study Results

From the data in Table 1, four general conclusions may be drawn about the applicability of the Master Planning process to communities of varying size and with various city and fire department organizational structures:

- Communities of any size can use the Master Planning process successfully.

- Both rural and urban areas can complete Master Plans.

- Both forms of city administration--elected and appointed--are compatible with Master Planning.

Photo Credit - FEMA/USFA

Master Planning in large metropolitan areas requires special approaches and management skills.

- Communities served by career, volunteer, and combination career and volunteer fire departments can develop and implement Master Plans successfully.

Field Experience and Recommendations

The experience of technical assistance personnel working with Master Planning communities, along with information from individual jurisdictions, provide insight into community characteristics and needs.* Observations and recommendations from Master Planning communities are presented below.

- Small communities often receive improved fire protection through multi-jurisdictional planning. Small communities often benefit from a joint Master Planning effort, coordinated and directed by a regional planning organization, which can provide necessary staffing and guidance. For example, the Northwest Arkansas Regional Planning Commission provided technical expertise and guidance to over 28 small to moderate size communities in Benton and Washington counties in the development of county or multi-jurisdictional fire protection plans. Communities which have attempted multi-jurisdictional planning without such technical assistance have reported difficulty in managing the process. Issues associated with assessment and coordination of fire and emergency services across political jurisdictions may hinder county or multi-jurisdictional planning efforts.

  Recommendations - Develop planning guides for multi-jurisdictional areas. Package case histories and model programs from areas which have done multi-jurisdictional planning to serve as resource material for other areas.

- Master Planning in large metropolitan areas requires special approaches and management skills. Experience with the Miami-Dade County Master Planning effort indicates that complex factors such as traffic control, community involvement, code development, and task force design and implementation need to be addressed in a manner relevant to metropolitan need and resources. The number of agencies which must be involved makes coordination difficult in metropolitan areas. Large port cities, in particular, have unique problems. The city of Los Angeles, for example, requested assistance from USFA in planning for the transportation and management of hazardous materials in its port. Existing Master Planning materials do not address these specialized needs. Limited Federal assistance to metropolitan areas can leverage other agency funds: in Los Angeles, a $10,000 grant from USFA leveraged an additional $30,000 from the California Coastal Commission. Los Angeles' experience could provide a useful model for other large cities.

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*Examples cited in this section have been taken from TSS field reports. (See Appendix E for a report on one Technical Support Services meeting.)

Recommendations - Develop planning guides and models for metropolitan Master Planning. Identify and package program options which meet the unique needs of metropolitan areas.

- Skilled and dedicated personnel are needed to support the planning effort. This is true for both volunteer and paid fire departments.

  Volunteer - Almost all of the rural, primarily volunteer, fire departments surveyed had their planning assistance provided through regional council of governments (COG), consultants, state personnel, or planners from the local or adjacent communities. By way of example, Figure 8 lists the sources of technical assistance used by Northwest Missouri in developing its Master Plan.

  Paid - Career fire departments often reassign existing personnel or hire additional personnel to oversee and manage the Master Planning process. For example, in Winston-Salem, N.C., four fire department personnel were reassigned to support the planning effort. The skills of personnel assigned to Master Planning can, however, vary greatly. Lack of skilled personnel may hinder the planning effort.

  Recommendations - Provide on-site technical assistance to communities with problems in the management of plan development and/or implementation. Promote the development of a directory of state and local sources of technical assistance for communities with volunteer fire departments. Develop tools for and provide technical assistance in data display and use in Master Planning; and in management of the Master Planning process, including community relations.

COMPONENTS OF EXISTING MASTER PLANS

The 15 Components

Documentation and/or information from 47 jurisdictions developing Master Plans were reviewed to determine which fire and emergency management components were included in their Master Plans. Table 2 shows those components of the four program areas--prevention, suppression, emergency response, and administration. (Emergency response was not addressed in the original Master Planning research and validation; this area, however, was included in the review by OPE.)

Because emergency response components were not addressed in the original Master Planning materials, it was predictable that this program area would be the one mentioned least frequently in the plans reviewed. It is significant, however, that 35 of the 47 planning jurisdictions reviewed did include one or more emergency response options in their Master Plan. The delivery of emergency medical services was the component included most frequently, with hazardous materials a close second. This would seem to indicate that communities perceived a need for emergency response components in their Master Plans, and found the Master Planning process flexible enough to allow for the incorporation of this area. Communities expressed difficulty in locating useable model programs for emergency response options. The lack of packaged emergency response program models would have limited the communities' ability to address this area in their Master Plans.

TABLE 2

FIRE AND EMERGENCY RESPONSE COMPONENTS
INCLUDED IN MASTER PLANS

COMMUNITIES	MASTER PLAN COMPONENTS														
	Prevention				Suppression			Emergency Response			Administration				
	Codes/Standards Legislation	Inspection/ Enforcement	Public Education	Arson Investigation	Staffing Strategies	Station Location	Water Supply	Emergency Medical Services	Hazardous Materials	Disaster Preparedness	Data Collection/ Analysis	Financing	Management Systems	Training	Communications
Benton County, AR		•	•		•	•	•				•	•	•		•
Fayetteville, AR	•	•	•	•	•		•	•			•	•		•	•
Jackson Co., AR	•	•		•	•	•					•	•	•	•	•
Springdale, AR	•	•		•	•	•					•	•	•		
Azusa, CA	•	•	•		•	•		•		•	•	•		•	•
Covina, CA	•	•	•		•	•		•		•	•	•		•	•
Culver City, CA	•	•	•							•		•		•	
Mountain View, CA	•	•	•		•	•	•			•		•	•	•	•
El Monte, CA	•	•	•									•	•	•	
Palm Springs, CA	•	•			•	•	•		•	•	•	•		•	•
San Clemente, CA	•	•			•	•	•		•	•	•	•		•	•
Santa Ana, CA	•	•	•	•	•	•	•	•			•	•	•	•	•
Springlake, CA	•	•	•	•	•	•	•		•	•	•	•	•	•	•
West Covina, CA	•	•	•		•	•		•		•	•	•		•	•
Maderia Beach, FL	•	•	•		•	•	•	•	•		•	•		•	•
Miami, FL	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Miami-Dade Co., FL	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Pasco Co., FL					•	•					•	•	•	•	•
Pinellas Co., FL	•	•			•	•	•		•		•	•	•	•	•
Springfield, IL	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Princeton, MA	•		•	•			•	•							
Northwest MO	•	•	•	•	•	•	•	•	•		•	•	•	•	•
Washington Twp., NJ		•	•	•	•		•				•	•			•
Nassau Co., NY					•	•	•	•	•		•			•	•

TABLE 2

FIRE AND EMERGENCY RESPONSE COMPONENTS
INCLUDED IN MASTER PLANS
(continued)

COMMUNITIES	MASTER PLAN COMPONENTS														
	Prevention				Suppression			Emergency Response			Administration				
	Codes/Standards Legislation	Inspection/ Enforcement	Public Education	Arson Investigation	Staffing Strategies	Station Location	Water Supply	Emergency Medical Services	Hazardous Materials	Disaster Preparedness	Data Collection/ Analysis	Financing	Management Systems	Training	Communications
Winston-Salem, NC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ashtabula Co., OH	•	•	•		•	•		•			•	•	•	•	•
S. Charleston, OH	•	•	•		•	•	•	•	•		•	•		•	•
Toledo, OH	•	•		•	•	•					•	•	•		•
Tulsa, OK	•	•			•	•	•				•	•		•	•
Tulsa-Creek Co., OK	•	•			•	•	•		•	•	•	•	•	•	•
Salem, OR	•	•	•		•	•		•			•	•		•	•
Sandy, OR	•	•			•	•	•	•			•	•		•	•
Carlisle, PA	•	•	•		•	•	•	•			•	•		•	•
Coatesville, PA	•	•			•	•	•	•	•	•	•	•		•	•
Lower Macungie Twp., PA	•	•		•	•	•	•		•		•	•		•	•
Middletown Twp., PA	•	•	•		•	•	•			•	•	•		•	•
Wescosville, PA	•	•	•				•		•		•	•		•	•
Williamsburg, PA	•	•			•	•	•	•	•		•	•		•	•
Greenwood, SC		•				•	•	•				•	•	•	•
McCormick Co., SC	•	•			•	•	•					•	•	•	•
Waccamaw Region, SC	•				•	•	•				•	•	•	•	•
Alamo Region, TX	•	•	•		•	•	•		•		•	•	•	•	•
Denison, TX	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Richardson, TX	•				•	•	•	•	•	•	•	•	•	•	•
Orem, UT	•	•	•	•	•	•	•	•			•	•	•	•	•
Va. Beach, VA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Bellevue, WA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Comprehensive Master Plans

Eleven of the 47 planning jurisdictions selected for study included at least 13 components from the four areas in their plans. These 11 may be considered as having "comprehensive" fire and emergency management plans.

Table 3 shows the characteristics (population, population density, type of city administration, and type of fire department) of the communities developing comprehensive plans. Included are:

- 6 densely populated metropolitan areas (Santa Ana, Calif.; Miami, Fla.; Miami-Dade Co., Fla.; Springfield, Ill.; Winston-Salem, N.C.; and Virginia Beach, Va.)
- 3 small urbanized areas (Denison, Tex.; Orem, Utah; and Bellevue, Wash.)
- 2 small town or rural areas (Springlake, Calif. and Northwest Mo.)

Eight of the communities had city managers, and the majority had fully-paid fire departments. The two communities with primarily volunteer departments—Springlake, Calif. and Northwest Mo.—had access to paid personnel with planning expertise who assisted in plan development (see Appendix F for more detail on personnel resources tapped by these two rural departments). It is hypothesized that the limited number of small communities developing comprehensive plans is due to the lack of resources, information, and/or access to personnel with planning expertise.

Study Results

From the data in Tables 2 and 3, the following general conclusions may be drawn:

- The Master Planning process is flexible enough to allow for the incorporation of emergency response components.
- Communities can develop comprehensive Master Plans which include components of all four program areas (prevention, suppression, emergency response, and administration).
- Both rural and urban communities are capable of developing comprehensive fire and emergency management plans.

Field Experience and Recommendations

The experience of personnel working with individual Master Planning communities provides additional information about the components included in the various Master Plans. Comments and recommendations include:

TABLE 3

CHARACTERISTICS OF COMMUNITIES DEVELOPING
COMPREHENSIVE MASTER PLANS

COMMUNITY	POPULATION	POPULATION DENSITY	TYPE OF GOVERNMENT		FIRE DEPARTMENT*			MASTER PLAN COMPONENTS
			Manager	Other	P	PP	V	
Santa Ana, CA	177,000	6,556	x		x			13
Springlake, CA	26,000	406		x		x		14
Miami, FL	365,000	1,043	x		x			15
Miami-Dade County, FL	1,439,000	705	x		x			15
Springfield, IL	95,148	2,265		x	x			15
Northwest MO (5 counties)	50,108	19		x			x	14
Winston-Salem, NC	150,000	2,419	x		x			15
Denison, TX	28,000	1,833	x		x			15
Orem, UT	36,000	2,250	x		x			13
Virginia Beach, VA	230,000	742	x			x		15
Bellevue, WA	65,000	2,407	x			x		15

*P - Paid PP - Part-Paid V - Volunteer

- Communities often adopt those fire and emergency management options for which model programs are available. For example, the residential inspection program in the Winston-Salem, N.C. Master Plan was modeled after the Edmonds, Wash. Home Safety Survey Program packaged by USFA. Springdale, Ark. is another example: the smoke detector ordinance specified in the Master Plan was based upon model legislation provided by USFA. Communities find it difficult to implement concepts and research reports; they tend to use program packages.

  Recommendation - Identify, develop, package, and deliver model programs which illustrate the use of technical options and/or innovative management systems for fire and emergency response components.

- Access to communities and/or personnel who have successfully completed Master Plans stimulates communities to begin comprehensive Master Planning. For example, Pasadena, Calif. and Little Rock, Ark. attribute their willingness to begin Master Planning to the availability of on-site technical assistance from personnel who had completed Master Plans. Knoxville, Tenn. decided to begin Master Planning after seeing the benefits derived from Master Planning in a neighboring community (Seymour, Tenn.). A review of the 90 Master Planning communities shown in Figure 9 indicates that all states with four or more communities involved in Master Planning included at least one successful validation community which may have served as a model. This seems to indicate that contact and communication with Master Planning communities does stimulate other communities to begin their own Master Planning.

  Recommendation - Provide opportunities for Master Planning communities to exchange information and experience. Provide communities developing plans with access to personnel from communities which have completed plans.

- State policies, regulations, and programs affect the options considered by Master Planning communities. State policies either can limit or expand the options which communities consider, and can affect the communities' access to information and/or planning assistance. The Virginia Beach, Va. planning team, for example, wanted its Master Plan to include a strengthening of sprinkler requirements by making automatic sprinkler systems mandatory in all buildings of over 10,000 square feet. Virginia, however, has a mandatory state minimum/maximum building code; therefore the planning team could not recommend modifications and the option had to be abandoned. Communities in states having such regulations must seek other alternatives such as smoke detectors or public education programs. State programs may provide assistance in areas such as public education, data collection, training, and arson investigation. The policies, authority, and assistance capabilities, however, vary from state to state (see Appendix G). In addition, state fire and emergency response programs often are fragmented and divided among many different agencies, making it difficult for communities to access needed information and assistance.

FIGURE 9

MASTER PLANNING COMMUNITIES WITH USFA CONTACT

ALABAMA
Madison County

ARIZONA
Flagstaff**

ARKANSAS
Benton County**
Fayetteville**
Jackson County**
Little Rock*
Springdale**

CALIFORNIA
Azusa**
Covina**
Culver City
El Monte
Fremont**
Los Altos
Mountain View
Oceanside*
Palm Springs
San Clemente
San Mateo
Santa Ana
Santa Rosa
West Covina**

COLORADO
Longmont*

CONNECTICUT
East Haven

FLORIDA
Madeira Beach**
Miami
Miami-Dade County**
Naples*
Palm Beach County
Pasco County
Pinellas County
Spring Hill*

IDAHO
Ketchum**

ILLINOIS
Godfrey**
Springfield*

KENTUCKY
Bowling Green
Pulaski County

MARYLAND
Carroll County*

MASSACHUSETTS
Princeton

MICHIGAN
Oshtemo*

MINNESOTA
Burnsville

MISSOURI
Northwest Missouri**

NEW JERSEY
Washington Twp.**

NEW YORK
Binghamton
Montour Falls
Moyers Corner
Nassau County
Perinton
Putnam Valley*

NORTH CAROLINA
Cary
Elizabeth City
Winston-Salem

NORTH DAKOTA
Devil's Lake**

OHIO
Ashtabula County
Circleville
Fairborn
Saybrook Twp.
S. Charleston**
Toledo

OKLAHOMA
Tulsa**
Tulsa/Creek Counties

OREGON
Forest Grove**
La Grande
Salem
Sandy

PENNSYLVANIA
Carlisle
Coatesville
East Allen Twp.
Kennett Square
Lower Macungie
Middletown Twp.
Neville Twp.
Palmyra County
Venango County
Wescosville
Williamsburg**

SOUTH CAROLINA
Clarendon County**
Greenwood
McCormick
Waccamaw Region

TENNESSEE
Seymour**
Southwest Tennessee**

TEXAS
Alamo Region
Denison
Richardson

UTAH
Orem

VIRGINIA
Virginia Beach**

WASHINGTON
Bellevue
Edmonds**
Forks*
Renton

WISCONSIN
Grant County

* Communities currently receiving Technical Support Services from USFA.
** Validation community.

Photo Credit - Little Rock Fire Department

Improved fire and emergency management results in reduced insurance costs and reduced fire losses.

Recommendations - Encourage and support state fire and emergency management planning. Provide communities with information on state and Federal assistance programs related to fire and emergency response program areas.

- Use of the Master Planning process is useful whether or not the complete plan is implemented and whether or not the plan is totally comprehensive. Experience indicates that the use of the Master Planning process in the development of fire protection plans which include options in only one or two program areas can lead to more comprehensive planning in the future. For example, the Warm Springs Indian Reservation in Oregon began by planning a targeted public education program. In identifying and clarifying its fire problems for the education program, it uncovered a need for improved suppression and prevention capabilities as well. The result was a proposal for a complete fire protection system which subsequently was approved and funded by its tribal council.

  Recommendation - Encourage communities to begin Master Planning at whatever level their resources and experience allow. Use technical assistance, model programs, and, if necessary, incentive funding to build local ability to plan and manage fire and emergency response programs.

BENEFITS OF MASTER PLANNING

There are numerous specific examples of benefits and savings realized by communities as a result of Master Planning. While USFA has not had the resources necessary to complete a broad, statistically valid assessment of the effectiveness of Master Planning in reducing fire costs, the following examples indicate the potential impact of Master Planning on fire protection costs.

The specific examples included in this section were submitted to USFA by Master Planning communities and/or individuals providing technical assistance to Master Planning communities. Examples are presented which illustrate how Master Planning reduces fire costs through:

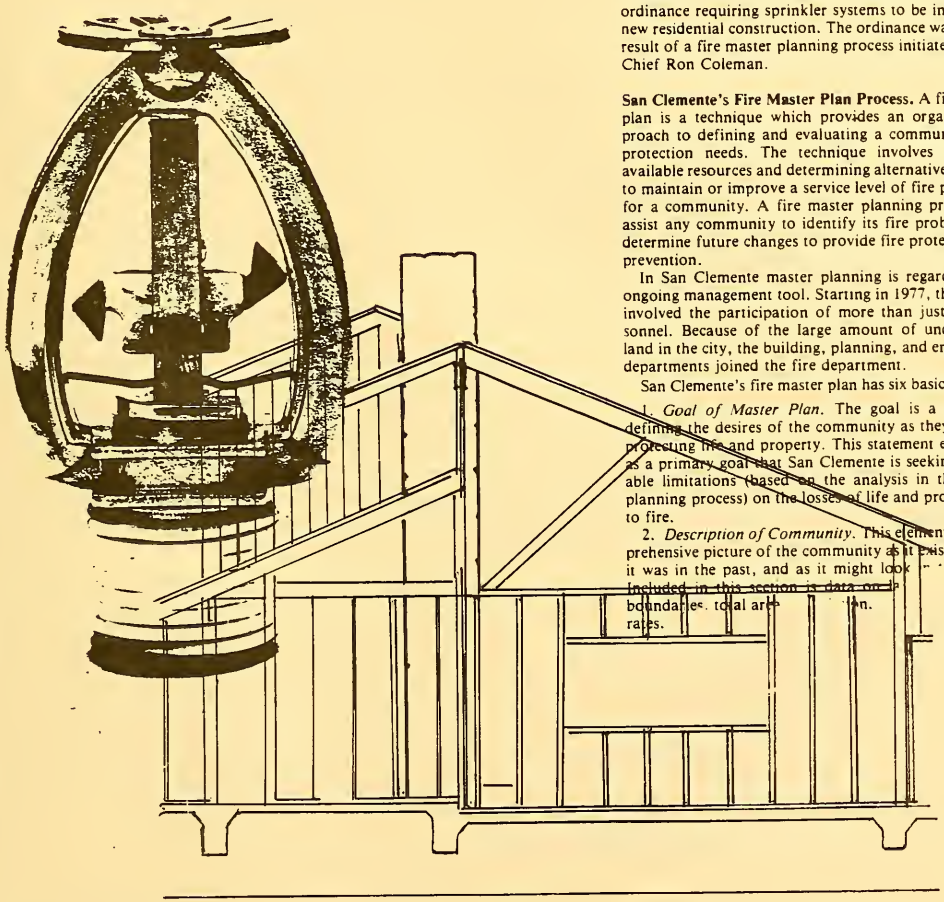
- Improved use of public and private sector resources as a result of coordination of city services and programs.
- Implementation of new technology and/or innovative approaches to fire protection.
- Improved fire and emergency management resulting in reduced insurance costs and reduced fire losses.

Improved Resource Utilization through Coordination

Improved coordination and cooperation between city or county departments or agencies reduces fire protection costs by eliminating duplicate programs and allowing agencies to combine ongoing activities. Coordination results in the improved use of private sector, city, and county resources.

Home Fire Protection

Fire Sprinkler Systems



RESIDENTIAL SPRINKLER PROGRAM: SAN CLEMENTE, CALIFORNIA

Faced with a tremendous growth rate and an increase in residential fires, San Clemente, California, passed an ordinance requiring sprinkler systems to be installed in new residential construction. The ordinance was a direct result of a fire master planning process initiated by Fire Chief Ron Coleman.

San Clemente's Fire Master Plan Process. A fire master plan is a technique which provides an organized approach to defining and evaluating a community's fire protection needs. The technique involves analyzing available resources and determining alternative methods to maintain or improve a service level of fire protection for a community. A fire master planning process can assist any community to identify its fire problems and determine future changes to provide fire protection and prevention.

In San Clemente master planning is regarded as an ongoing management tool. Starting in 1977, the process involved the participation of more than just fire personnel. Because of the large amount of undeveloped land in the city, the building, planning, and engineering departments joined the fire department.

San Clemente's fire master plan has six basic elements:

1. *Goal of Master Plan.* The goal is a statement defining the desires of the community as they relate to protecting life and property. This statement establishes as a primary goal that San Clemente is seeking reasonable limitations (based on the analysis in the master planning process) on the losses of life and property due to fire.

2. *Description of Community.* This element is a comprehensive picture of the community as it exists now, as it was in the past, and as it might look in the future. Included in this section is data on [illegible]ning, boundaries, total area, population, tax rates.

Use of new or improved technology and/or the development of innovative approaches to providing fire or emergency services often will reduce fire protection costs, or result in a more equitable distribution of these costs between the public and private sector.

Examples:

Use of Private Sector Resources - In Santa Ana, Calif., an innovative approach to the delivery of emergency medical services resulted in a savings to the community of an estimated $500,000 per year. As a result of Master Planning, the Santa Ana Fire Department was able to provide emergency medical services by using a combination of cross-trained firefighter/paramedics and hospital personnel based at fire stations. A fire station location study conducted as part of Santa Ana's Master Planning effort yielded additional savings to the community. The study results showed that one new fire station could provide protection equivalent to the two new stations which originally had been planned.

Use of City Resources - Fayetteville, Ark. reported an estimated savings of $170,000 as a result of improved station location. Fayetteville, a rapidly growing university town, expected to increase the number of fire stations by two in fiscal year 1978. Through the Master Planning process, the city was able to effectively identify its fire problems and to provide the same level of service by building only one strategically located station, thereby saving the community 70 percent of the originally anticipated cost. (Community involvement in the planning process resulted in donated labor, which reduced public costs further.)

In Little Rock, Ark., coordination of street and water department services resulted both in a savings to these departments and in improved fire apparatus response. Streets closed for repair necessitate the re-routing of fire apparatus responding to fire calls, which consequently can increase fire department response time. Prior to Master Planning, Little Rock street and water departments did not coordinate the closing off of streets. During an initial meeting of the planning team, representatives from the street and water departments agreed to coordinate those activities which would require the blocking of streets (e.g., curbing, installation of water mains). This cooperation is expected to result in a savings to the community in terms both of the cost of street repairs and of improved fire protection.

Use of County Resources - In Benton County, Ark., coordination between 23 independent fire departments and a county planning board resulted in improved planning for and location of fire hydrants and water lines. Prior to Master Planning, the planning board made decisions about street grades, hydrant locations, and water lines without input from the local fire departments which use them. Master Planning brought the independent fire departments together and resulted in a joint submission from the fire departments to the planning board. This submission, which was adopted by the Planning Board, resulted in better utilization of the county resources (e.g., street, hydrant, and water line locations) for fire protection.

Implementation of New Technology and/or Innovative Approaches

Use of new or improved technology and/or the development of innovative approaches to providing fire or emergency services often will reduce fire protection costs, or result in a more equitable distribution of these costs between the public and private sector. For example, improved technology has greatly reduced the costs of automatic detection and suppression systems, making them a viable option for fire protection. In some instances, the installation of such detection (smoke

detector) or suppression (sprinkler) systems can be substituted for increased future suppression capabilities. The cost of smoke detectors or sprinklers is borne by the private sector, whereas additional fire stations or equipment generally is a public sector cost. Through Master Planning, several communities have implemented such new technical options for fire prevention and control. Examples:

Sprinkler Legislation - In Springdale, Ark., the Master Planning team recommended the installation of sprinklers in some of the larger buildings. The city council passed a 1978 ordinance requiring any building of over 12,000 square feet to be protected by an automatic sprinkler system. Since the alternative to sprinklers would have been the building of additional fire stations, this legislation represented a major shift in the responsibility for fire protection from the public to private sector. In San Clemente, Calif. a residential sprinkler ordinance was proposed to reduce future suppression costs. This residential sprinkler ordinance, which requires automatic fire suppression in certain multi-family residences, will be the first of its kind in the United States.

Automatic Dispatch - The Miami, Fla. Master Plan recommended a computer assisted dispatching system which would more efficiently receive fire and emergency alarms and dispatch the appropriate equipment. Additionally, terminals would be installed in all fire stations to allow on-line entry to local data into the fire information system. The San Clemente, Calif. Master Plan recommended a master alarm system ordinance study, in order to determine the optimum dispatch system for that community.

Improved Fire and Emergency Management

Improved fire and emergency management reduces the cost of fire through reduced insurance premiums and/or reduced fire losses. Examples:

Reduced Insurance Costs - Recommendations in the Springfield, Ill. Master Plan resulted in an improved insurance rating from the Insurance Services Office (ISO) which will save citizens over one million dollars in insurance costs. An improved ISO rating was one of the goals of Springfield's Master Plan.

Princeton, MA reported that implementation of its Master Plan saved residents over $300,000 the first year after its Master Plan was implemented. The majority of this reduction is believed to be a result of the installation of strategically located ponds to provide the water needed for residential fire suppression.

Several other communities contacted by USFA reported fire loss reductions or improved levels of service which are believed to have been a direct result of Master Planning. Data showing fire loss reductions in Tulsa-Creek County, Okla. (rural) and Miami, Fla. (urban) are displayed in Table 4.

SUMMARY

The data and examples presented in this section, while not conclusive, indicate the potential of Master Planning to reduce fire costs, and suggest the kinds of assistance which communities need in order to realize that potential.

TABLE 4

FIRE LOSS REDUCTIONS IN TWO MASTER PLANNING COMMUNITIES

COMMUNITY	YEAR	TOTAL LIFE LOSS	LIFE LOSS (PER MILLION)	PROPERTY LOSS - $*	PROPERTY LOSS PER CAPITA	REASONS FOR REDUCTION
Miami, FL	1976	16	4.5	2,532,615	$ 7.15	
	1977	15		3,037,900		Code enforcement by fire suppression division
	1978	11		2,917,577		Fire code amendments requiring smoke detectors or horizontal separation in multi-family occupancies
	1979	4	1.1	2,100,051	6.02	
Tulsa-Creek County, OK**	1976	7	6.1	1,468,000	12.85	Installation of smoke detectors in unincorporated areas of Tulsa County
	1978	3	2.8	876,138	8.32	

* Not adjusted for inflation
** Does not include City of Tulsa

Potential for Reduced Costs through Improved Management

The Master Planning process has been used by communities with varying characteristics in considering the many different options for fire and emergency management, and to select those best suited to their needs and resources. Examples have been presented which illustrate the effectiveness of Master Planning in improving the use of public and private fire and emergency response resources through community involvement, and improving the use of technology through systematic analysis of technical options.

Process Management Assistance and Resource Materials Needed

The data and information also suggest ways in which the use of Master Planning by communities could be stimulated and supported. Figure 10 summarizes these recommendations, many of which focus on helping communities to foster community involvement in Master Planning and/or to adopt available technology for fire and emergency response.

FIGURE 10

RECOMMENDATIONS FOR STIMULATING AND SUPPORTING COMMUNITY MASTER PLANNING

I. Assistance in Process Management to Maximize use of Resources

- Develop planning guides for multi-jurisdictional areas (both rural/suburban mixed).
- Provide on-site technical assistance for local plan development, implementation, and management.
- Develop tools for and provide technical assistance to communities in data display and for use in management of the Master Planning process, including community relations.
- Provide opportunities for Master Planning communities to exchange information and experience.
- Provide communities which are developing plans with access to personnel from communities which have completed plans.

II. Assistance in Implemention of Technical Options for Fire and Emergency Response

- Package case histories and model programs from areas having multi-jurisdictional planning to serve as resources for other jurisdictions.
- Identify and package program options which meet the unique needs of metropolitan areas.
- Identify, develop, package, and deliver model programs illustrating the use of technical options and/or innovative management systems.
- Develop a directory for state and local sources of technical assistance for communities having volunteer fire departments.
- Provide communities with information on state and Federal assistance programs relevant to fire and emergency response program areas.

III. General Support and Stimulation of Community Master Planning

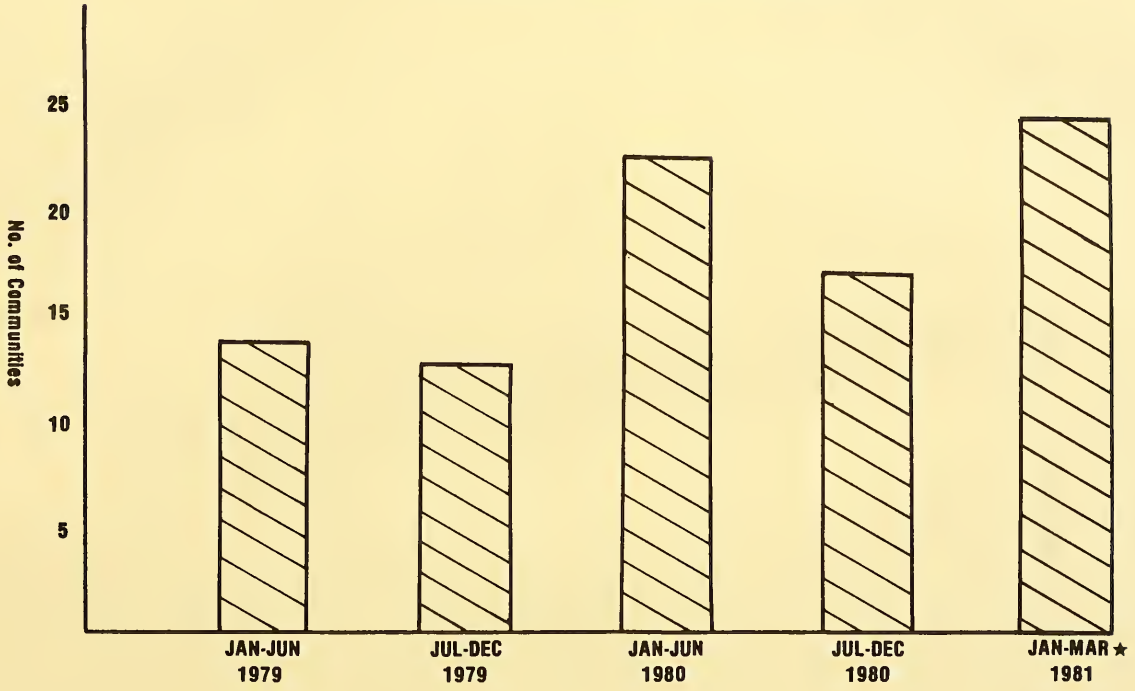
- Encourage and support state fire and emergency management planning.
- Encourage communities to begin Master Planning at whatever level their resources and experience allow.
- Use technical assistance model programs to increase local ability to plan and manage fire and emergency response programs.

Experience of Master Planning Communities

FIGURE 11

MASTER PLANNING

TECHNICAL ASSISTANCE DELIVERED--I



★ THROUGH MARCH 13, 1981

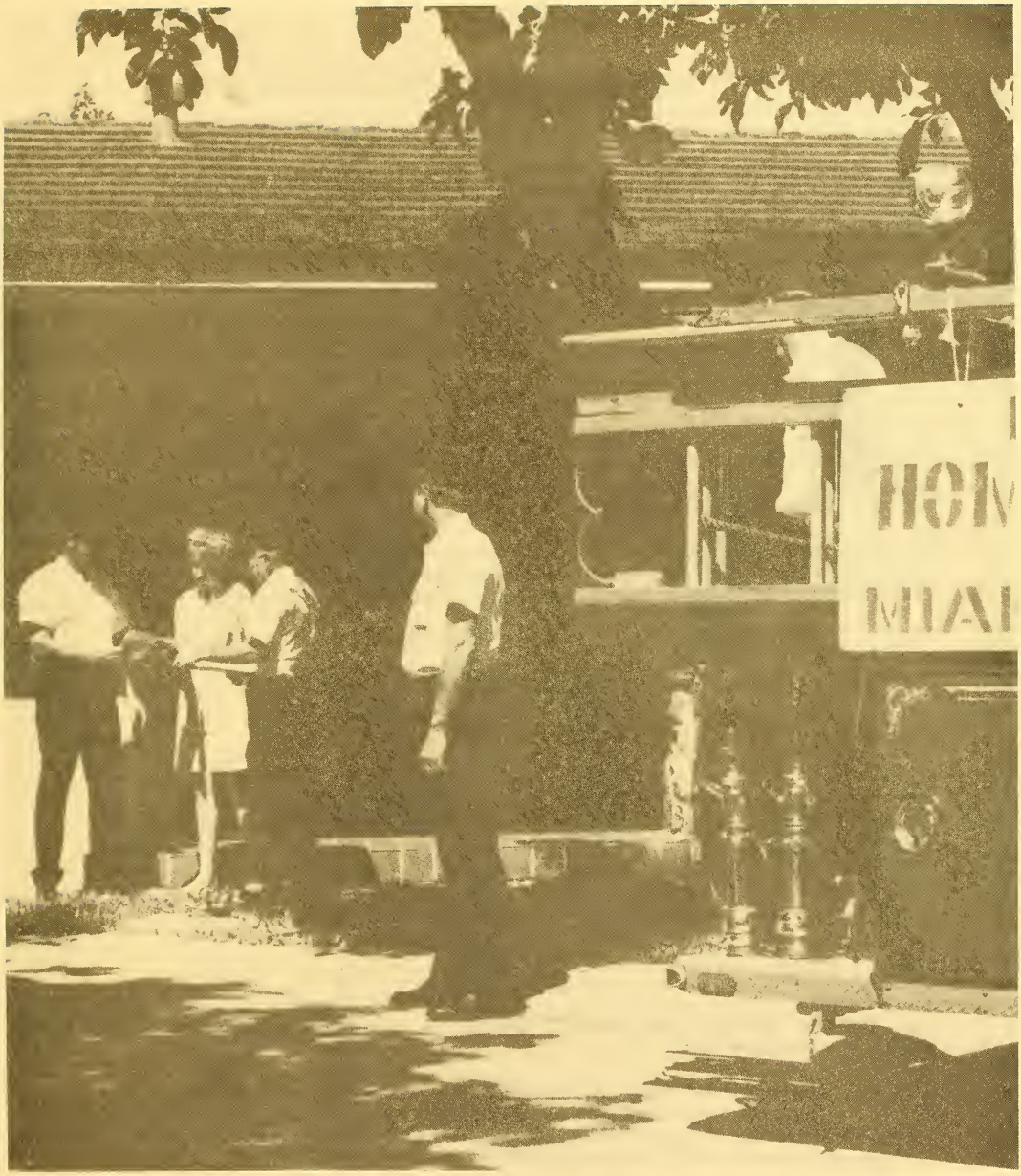


Photo Credit - America Burning - The National Commission on Fire Prevention and Control

The effectiveness of Master Planning in reducing the cost of fire has been demonstrated in pilot communities.

IV. PROPOSED MASTER PLANNING ASSISTANCE PROGRAM

This Chapter proposes a Federal program for reducing national fire costs and losses through fire and emergency management Master Planning. The proposed program is consistent with the Federal role as defined in Public Law 93-498, Section 10, which directs USFA to "encourage and assist" states and communities in Master Planning activities. The program includes initiatives in three areas:

1. Technical Assistance in Process Management.

2. Resource Materials for Technical Options.

3. Evaluation of Program Effectiveness.

The first two initiatives (Technical Assistance and Resource Materials) focus on helping communities to better use the Master Planning process to reduce their fire costs. These initiatives reflect the experience and recommendations of Master Planning communities presented in Chapter III.

The third initiative (Evaluation of Effectiveness) is a strategy for documenting and measuring Federal program effectiveness which would result in annual reports evaluating the effectiveness of Master Planning in reducing fire costs.

TECHNICAL ASSISTANCE IN PROCESS MANAGEMENT

The Need

Community involvement in the Master Planning process can result in the improved use of public and private sector resources for fire and emergency response. The effective use and management of these resources has, however, posed problems for many communities. These problems are especially evident in metropolitan areas where numerous city agencies are involved, and in rural areas which may encompass several political jurisdictions. Master Planning communities need tools and technical assistance to help them improve their management of the Master Planning process.

Proposed Initiatives

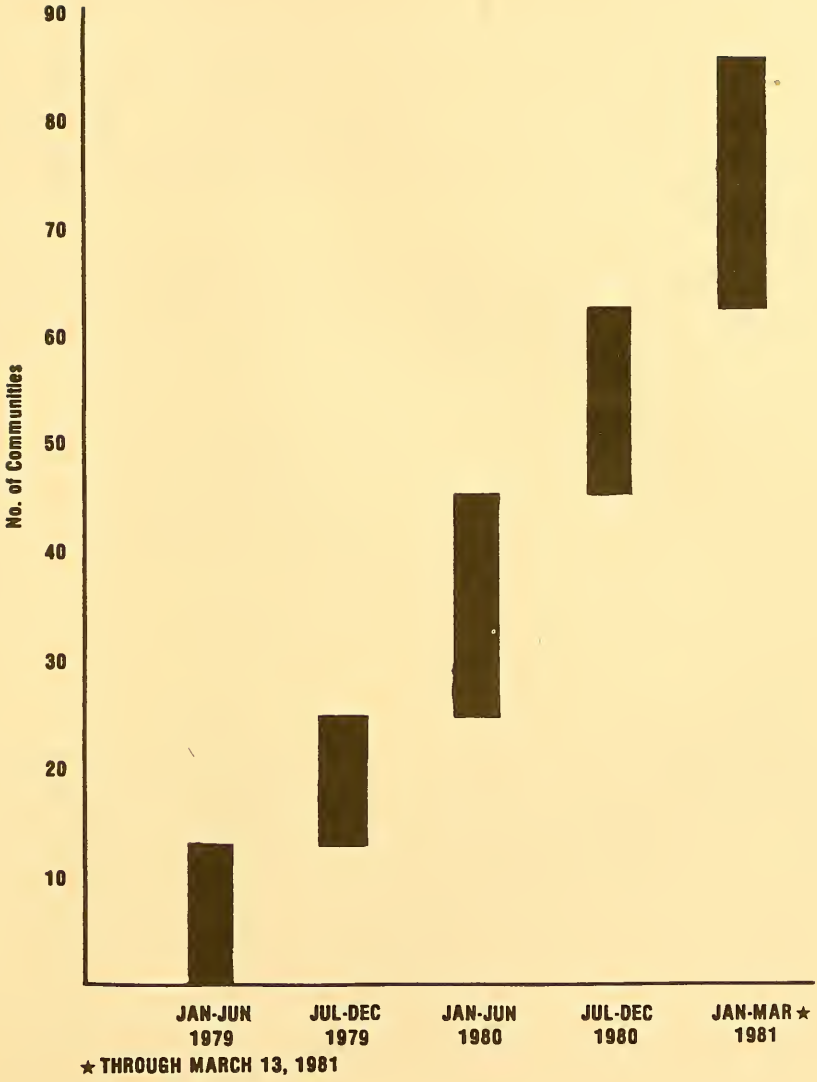
The following initiatives are proposed to improve community management of the Master Planning process:

- Multi-jurisdictional and Metropolitan Tools and Model Programs - Successful approaches and techniques for achieving community involvement and support in large metropolitan areas and in multi-jurisdictional areas will be identified, packaged, and made available to interested communities. Model programs meeting the needs of these areas will be identified and packaged for use by metropolitan and rural communities.

FIGURE 12

MASTER PLANNING

TECHNICAL ASSISTANCE DELIVERED--II



- Data Use and Display Workshops and Assistance - Existing materials on data use and display now being field tested by USFA will be revised as needed and made available to Master Planning communities, along with on-site technical assistance from Technical Support Services personnel in solving local data problems. In addition, a directory of resources for applied data analysis techniques will be developed and disseminated to Master Planning communities.

- Process Management Workshops and Assistance - Workshops and materials addressing specific areas of concern to Master Planning communities will be developed and delivered by Technical Support Services personnel. Areas to be addressed might include budgeting and finance, use and involvement of advisory committees, Master Plan development and presentation, and use of the Master Plan for program management.

  The workshops for planning team members would be delivered regionally. Thus, in addition to providing guidance in handling specific management problems, the workshops would serve as a forum for communities within a state or region to share their experiences in Master Planning. Such sharing will build support for improved fire and emergency management within a state.

- Master Planning Orientation Package - A package of materials will be developed for use with community planning teams and advisory committees. The package would be used by communities to explain the need for fire and emergency management planning, to show how the Master Planning process works, and to define the roles and responsibilities of both the public and private sectors in plan development and implementation.

RESOURCE MATERIALS FOR TECHNICAL OPTIONS

The Need

Master Planning communities need access to fire and emergency management options packaged for local implementation. A review of USFA publications reveals many existing sources of information on fire protection technology and research. In addition, numerous innovative fire and emergency response programs have been developed by communities. These locally-developed options range from procedures for firefighter equipment maintenance to model codes for health care facilities. For these technical options and innovative approaches to be useful at the local level, however, communities first must be made aware of their existence and must have access to the programs using them.

Proposed Initiatives

The following initiatives are proposed to meet the need for local access to available technology:

- Packaged Model Programs - Innovative options and/or local programs for each of the 15 components identified in Table 1 will be packaged for use by local communities.* Program options appropriate for urban and for multi-jurisdictional areas will be identified and packaged.

- Master Planning Resource Center - The packaged technical options, along with information on other local program activities and resource personnel, will be made available to communities through a Master Planning resource center.** The resource center contains a collection of information, programs, master plans, funding sources, and resource personnel. It serves as a focal point for directing communities to an appropriate source for any information needed.

EVALUATION OF PROGRAM EFFECTIVENESS

The Need

A combination of tools and technical assistance, and incentive funding has been recommended to support and stimulate the use of Master Planning by communities. The use of Master Planning by pilot communities already has been shown to result in:

- Improved coordination and cooperation between city agencies, resulting in better resource utilization.

- Better use of technological options to reduce fire protection costs.

- Reduced fire losses through improved fire and emergency management.

Any Federal initiative to expand these benefits to other communities through Federal assistance should be carefully planned and monitored to allow for an assessment of the cost-effectiveness both of the Master Planning process and of the Federal programs designed to stimulate and support its use locally.

Proposed Initiative

It is proposed that a strategy for the delivery of technical assistance and resource materials to communities be designed in such a way that the program can be monitored and evaluated over a three-year period. Master Planning evaluation criteria, displayed in Appendix H, will be used as a basis for developing an evaluation strategy to document the effectiveness of Master Planning in reducing local fire costs through improved fire and emergency management.

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*The strategy of packaging existing programs for use by other communities has been used by USFA for public education programs (e.g., Edmonds Home Safety Survey; Juvenile Firesetter Counseling) and has proved to be cost effective. See Public Education Report to Congress, 1980.

**USFA already has established resource centers for two Master Planning components--public education and arson. The proposed Master Planning Resource center would supplement, not duplicate, existing program resources.

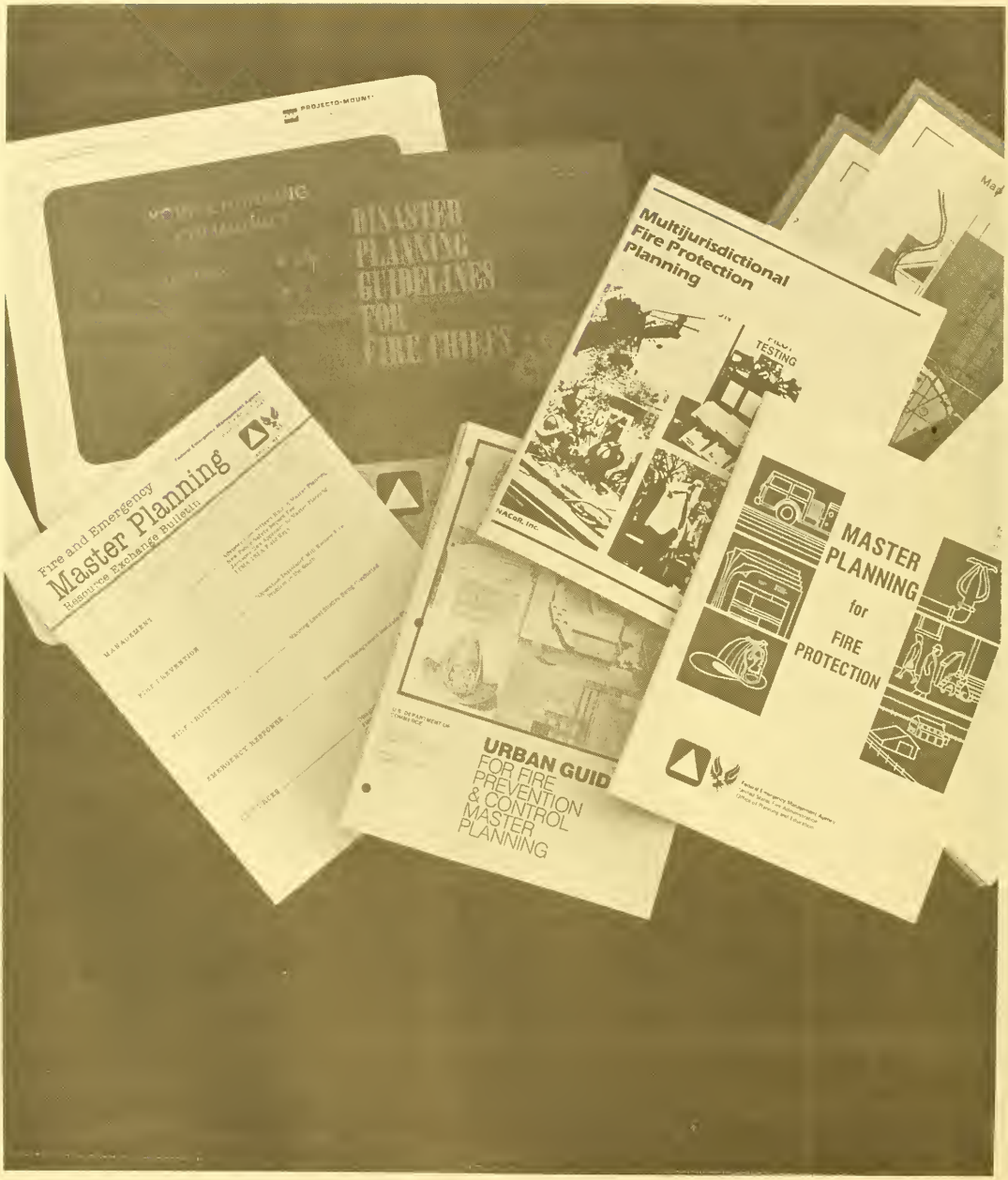

Photo Credit - FEMA/USFA Data Center

Master Planning communities need tools and technical assistance to help them improve their management of the Master Planning process.

CONCLUSIONS

Community Master Planning is a program which now is ready for broad dissemination. USFA's Master Planning Program has followed an orderly development process from conceptualization to local implementation. The effectiveness of Master Planning in reducing the cost of fire has been demonstrated in pilot communities. The experience and recommendations of these communities are reflected in the Master Planning Assistance Program initiatives.

Just as Master Planning improves utilization of local resources in reducing fire costs, the Master Planning Assistance Program uses local, state, and Federal resources to reduce fire and emergency losses. The Program recommends the identification and packaging of outstanding fire and emergency management programs for local implementation. Experienced local personnel will be used to provide communities with assistance in options analysis and process management. Existing state fire and emergency response assistance programs will be accessible to Master Planning communities.

The proposed Master Planning Assistance Program focuses on local implementation of many FEMA programs and initiatives. The program does not necessitate research and development of new technology, but rather utilizes delivery and application of existing fire and emergency management programs and information. The fire and emergency options considered by Master Planning communities will originate in other FEMA programs. Thus, the Master Planning Assistance Program will provide a channel for the delivery of FEMA products and research results to communities and their fire departments.

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APPENDIX A

MILESTONES IN MASTER PLANNING

MILESTONES IN MASTER PLANNING

1973

May — Master planning concept first expounded in America Burning, the Report of the National Commission on Fire Prevention and Control. Among the report's more than 100 recommendations was that Master Planning became the cornerstone of the national effort to reduce the fire problem at the local level.

1974

October — National Fire Prevention and Control Administration (NFPCA), created by Public Law 93-498 established Master Planning as a major function (Section 10).

1975

March — Urban Guide for Fire Prevention and Control Master Planning published - 1st edition.

July — Basic Guide for Fire Prevention and Control Master Planning published - 1st edition.

September — Urban Guide distributed to 13 communities for validation of its utility.

October — First National Conference sponsored by NFPCA centered attention on Master Planning. Held in Orlando, Fla., the conference was attended by 600 representatives of fire service groups and municipal and state governments.

1976

October — Second National NFPCA Conference, "The Dynamics of Fire Prevention," held in Los Angeles, Calif., examined alternatives to traditional fire protection systems and generated input into the development of a state planning assistance program.

December — Field testing of Urban Guide completed.

1977

March — Urban Guide revised and made available for general distribution.

June — Field testing of Basic Guide completed.

Federal Fire Service Task Group was organized and formulated policy for Master Planning in Federal agencies having fire-related responsibilities. Long-range "national fire Master Plan" under study.

1977

June — Assessment of the Transferability of the Community Fire Master Planning Program. Report of the Panel of Municipal Administrators, for NFPCA, by the International City Management Association (ICMA).

September — Institute for Local Self Government published A Tale of Two Cities, the stories of two communities (identical in political structure, size, and potential fire problems), one of which uses Master Planning, and effectively reduces its fire losses through the innovative use of personnel and resources. Wide distribution introduced Master Planning concepts and benefits to community officials.

October — Third National NFPCA Conference held in St. Louis, Mo. The subject, "Policy Leadership in Fire Protection," provided further exposure of and input into the formulation of the Policy Development Assistance Program.

1978

January — Basic Guide revised and prepared for general distribution.

May — Policy Development Assistance Program (PDAP) begun. Grants awarded to four states whose Master Plans are expected to be completed by late 1980.

October — Report to Congress submitted as mandated by enabling act PL 93-498; prepared by the International City Managers Association for the U.S. Fire Administration, as an expansion of the Assessment of Transferability study.

1979

January — National Fire Academy offered three-day course, "Preparation for Master Planning," in cluster outreach programs held in San Francisco, Calif.; New Haven, Conn.; Minneapolis, Minn.; and Atlanta, Ga. (112 students participated.)

January — Technical Support Service (TSS) initiated to provide technical assistance and advice to communities involved with Master Planning, and to encourage other communities to begin.

April — Master Planning program transferred from the National Fire Safety and Research Office (NFPCA) to the Office of Planning and Education (USFA).

April — National Association of Counties (NACO) funded to develop a multi-jurisdictional Master Planning guide.

August — Master Planning slide program produced to provide community leaders and fire officials with a motivational and informational tool to encourage Master Planning activities.

APPENDIX B

OREGON MASTER PLAN SUMMARY

OREGON MASTER PLAN SUMMARY

The Master Planning process was originally developed for use at the community level. However, feedback from states indicated that they had a similar need to survey resources, prioritize needs and develop a rational plan for managing the fire protection services delivered to communities. In response USFA funded four states (40K per state) to pilot test the feasibility of Master Planning at the state level.

The state Master Planning project has not yet been completed, however, the experience of the four states (Oregon, Pennsylvania, North Carolina and Washington) using the master planning process parallels that of communities, with differences being primarily of scale rather than content (e.g., more agencies involved, more data to be collected and analyzed, more political sensitivities to be considered). All four states have reported that improved coordination and communications with other state agencies on fire prevention and control programs has already justified the effort expended thus far on Master Planning.

One state, Oregon, has completed their plan and is hoping for implementation in Fall, 1980. The Oregon Plan (included in this Appendix is included to illustrate state Master Planning capability.

Since communities are the ultimate benefactor of improved state fire and emergency services management, state Master Planning may offer the greatest potential of all for reducing the cost of fire protection and fire losses. However, recommendations related to state Master Planning are beyond the scope of this report. In FY81 USFA plans to review closely the experience of the four states pilot testing PDAP to determine the feasibility of continuing or expanding that program. The results of this analysis can be prepared for Congress upon request.

APPENDIX C

FEDERAL FIRE-RELATED PROGRAMS

I. Research and Development of Technical Options for Fire and Emergency Management

II. Standard-Setting and Regulation

III. Technical and Financial Assistance Programs

FEDERAL FIRE-RELATED PROGRAMS

I. RESEARCH AND DEVELOPMENT OF TECHNICAL OPTIONS FOR FIRE AND EMERGENCY MANAGEMENT

A. Department of Agriculture

(Provides assistance to state and private owners in the protection, management, and use of 574 million acres of forest land and watershed land. DOA provides assistance in improving fire prevention and control.)

1. Agriculture Research Bureau - spent $6.5 million in 1965-1973 to develop fire and smolder resistant cotton bedding and sleepware. An additional $6.5 million was spent for research and technology dissemination. The program produced over 100 technical accomplishments, 54 patents, and 10 commercial products.

2. Fire Management - developed National Fire Danger Rating System to provide a method of predicting fire danger and fire behavior based on weather conditions, ground fuels, and topography.

3. Fire Management - developed FIRESTAT to compile fire occurrence statistics, containing 30-60 data elements. The content is servicewide and contains statistics compiled monthly on the approximately 12-14 thousand fires per year which occur on National Forest Service land.

4. Forest Service - is concerned with arson, not only in the National Forests--totaling 187 million acres--but also in state and private forest lands--totaling 800 million acres. The Forest Service is involved in investigation, enforcement, cooperation, public education, and research related to arson.

B. Department of Commerce

1. National Bureau of Standards, Institute for Applied Technology - conducts research and performs tests on furnishings to determine their combustibility. Conducts research into standards of safety for fire resistant materials.

2. National Bureau of Standards, Center for Building Technology - provides technical services to promote innovations in industry and government; develops technical data for use in developing model building codes and standards.

3. Center for Fire Research - created by Congress in 1974 to perform and support "research on all aspects of fire with the aim of providing technical knowledge applicable to the prevention and control of fires" (PL 94-498, Sec. 16).

C. Federal Maritime Commission

(Sponsors research in shipboard fire hazards.)

D. National Aeronautics and Space Administration

(Heavily involved in research and development, primarily as it applies to aerospace transportation materials, systems engineering, explosives and propellants, and power plants of aircraft. Technology transfers, such as fire retardant and fire resistive materials, detection devices, personnel protective equipment, etc., are being adapted to everyday life.)

E. Veterans Administration

Department of Medicine and Surgery - conducts considerable research in flammability of interior finishes, garments, and furnishings.

II. STANDARD-SETTING AND REGULATION

A. Federal Communications Commission

(Regulates the use of radios and the assignment of radio frequencies in fire, police, and public safety operations.)

B. Federal Trade Commission

Bureau of Consumer Protection - regulatory authority over deceptive or misleading advertising. Initiated major action in 1974 against plastics industry over claims regarding the fire hazards of plastics. Reviews fire standards and tests, reviews advertising to eliminate false and unfounded fire safety claims, and works with the Consumer Products Safety Commission and others to correct deficiencies.

C. Department of Health and Human Services

(Enforces National Fire Protection Association and other fire safety codes in over 25,000 hospitals and nursing care facilities. Directly regulates fire protection in public health service hospitals and 52 government owned Indian hospitals. Participated in the development of the Institutional Public Safety Evaluation System with the National Bureau of Standards and the United States Fire Administration.)

D. Department of Housing and Urban Development

(Establishes and maintains standards of selection for new materials and methods. Establishes, maintains, and enforces mobile home fire safety and construction requirements. Evaluates technical suitability of products and materials.)

Federal Insurance Administration - monitors the administration and operation of the State Fair Access to Insurance Requirements (FAIR) plans. FAIR plans are established primarily by state legislation to make essential property insurance available to residents of areas—mostly urban—where such insurance is either unavailable or unaffordable.

E. Department of Labor

Occupational Safety and Health Division - develops and promulgates occupational safety and health standards; develops and issues regulations; issues citations and proposes penalties for non-compliance with safety and health standards and regulations in industry and business; promulgates firefighter safety standards.

F. Nuclear Regulatory Commission

(Establishes standards for the construction and operation of all nuclear facilities, including fire protection features. Inspects operations for compliance with standards of safety [including fire protection]. Some nuclear material is used in smoke/fire detectors.)

G. Department of Transportation

1. Materials Transportation Bureau - administers intermodal hazardous materials safety regulations and processes, and recommends for issuance all intermodal and certain other modal regulations.

2. National Highway Safety Administration - promulgates standard (e.g., no. 301 on fuel tanks, fuel tank filler pipes, and connections for passenger cars; no. 302 on flammability of interior materials for cars, multipurpose passenger vehicles, trucks, and buses).

III. TECHNICAL AND FINANCIAL ASSISTANCE PROGRAMS

A. Prevention

1. Department of Agriculture

Forest Service, Cooperative Forestry Assistance - encourages the practice of fire safety habits in the forest through dissemination of brochures and other informational materials. Promotes fire safety campaigns through the media and "Smokey Bear." Also is concerned with arson, not only in the National Forest—totaling 187 million acres, but also in state and private forest lands—totaling 800 million acres. The Forest Service is involved in investigation, enforcement, public education, and research related to arson.

2. Department of Commerce

National Bureau of Standards, Building Code Assistance to States - provides states, local governments, and industry with current information on state programs relative to codes and standards, legislation, and services.

3. Federal Emergency Management Agency

Federal Disaster Response and Recovery

a. Minimum Standards for Public and Private Structures - assures that repair or reconstruction is in accordance with standards, and provides technical assistance. Encourages use of mitigation measures to protect the facility against future damage.

b. United States Fire Administration; Office of Planning and Education, Public Education Assistance Program - finances grants to states to develop or improve their capacity to provide communities with leadership, information, materials, technical assistance, and training in planning, implementing, and evaluating public fire education programs.

4. Department of Health and Human Services

Social Security Administration - provides assistance to nursing homes and health care facilities, and requires compliance with its fire safety standards and inspection requirements.

5. Department of the Interior

a. Bureau of Indian Affairs - responsible for preventing and suppressing fires on 59 million acres of Indian forest and range land. BIA investigates all fires occurring on its lands; and, when necessary, uses its arrest authority.

b. Bureau of Land Management - responsible for 455 million acres of federal wildland. Has an ongoing fire prevention program to reduce arson and other human-caused fires through education and enforcement.

c. National Park Service - provides protection to 14 million acres of national parks. Its fire prevention program is coordinated through seven regional offices.

6. Department of Justice

a. Federal Bureau of Investigation - enters the scene after arson has been committed. Involved both in statistical reporting and in investigation--including supportive training and laboratory analysis of evidence.

b. Law Enforcement Assistance Administration, Arson Assistance Program - provides technical assistance to communities in setting up arson task forces. Promotes training in arson detection and investigation, delivered through the Fire Administration. LEAA is developing a national arson control assistance strategy which will address the growing incidence of arson and the resulting community concerns.

7. Department of Treasury

Bureau of Alcohol, Tobacco, and Firearms (ATF) - authorized to combat the arson problem at the federal level, and to assist state and local authorities. Its major function is to investigate violations and to enforce the federal statutes which prohibit possession and use of explosives and other destructive devices which commonly are used by arsonists.

B. Suppression

1. Department of Agriculture

a. Farmers Home Administration

(1) Community Facility Loans - provides financial assistance to improve facilities providing essential services to rural residents.

(2) Water and Waste Disposal Loans and Grants - provide financial assistance to rural communities for modifying, repairing, improving, and extending water supply systems.

b. Forest Service

(1) Cooperative Forestry Assistance - aids in control of rural fires by providing manpower and equipment.

(2) Rural Community Fire Protection - provides project grants to organize fire protection districts, and to train firefighters in wildland and structural fire suppression activities.

2. Federal Emergency Management Agency

Disaster Response and Recovery, Fire Suppression Assistance - provides financial assistance to states when FEMA determines that a fire on public or private forest land or grassland threatens such destruction as would constitute a major disaster.

3. Department of Housing and Urban Development

Community Planning Development, Community Development Block Grants - provides project community grants for the acquisition, construction, reconstruction, and rehabilitation of certain public works, and facilities; and for the design, implementation, and enforcement of codes.

4. General Services Administration

Federal Supply Service, Donation for Federal Surplus Personal Property - provides surplus items to public agencies; including office machines and supplies, furniture, hardware, special purpose motor vehicles, boats, airplanes, and construction equipment.

5. Department of the Interior

Bureau of Land Management

a. Water Research and Technology - provides hydrologic information for use by decision-makers and planners in development and conservation of water resources.

b. Wildfire Suppression Program - provides fire control forces, aircraft, manpower, equipment, and food supplies for firefighters.

6. Department of Transportation

(The Coast Guard provides assistance in fighting shipboard fires and fires in port facilities.)

C. Emergency Response

1. Department of Agriculture

a. Farmers Home Administration, Emergency Loans - assist farmers to cover losses resulting from natural disaster.

b. Food-Consumer Services, Emergency Food Assistance for Victims of Disaster - helps to alleviate hunger resulting from a natural disaster (food stamps).

2. Environmental Protection Agency

a. Office of Enforcement, Pesticides Enforcement Program Grants - provides assistance to states in developing and maintaining pesticides enforcement programs.

b. Office of Toxic Substances, Pesticides Science and Technology, Technical Information - provides specialized information on chemical pesticides.

c. Office of the Administrator, Emergency Assistance - provides technical assistance--upon the request for a state's Governor in the event of an environmental emergency.

d. Office of Water and Waste Management

(1) Solid and Hazardous Waste Management Program Support Grants - develops and implements hazardous waste programs to provide management, resources recovery, and conservation services.

(2) Solid Waste Management, Technical Assistance Panel Program - provides technical assistance in solid waste management.

3. Federal Emergency Management Agency

a. Disaster Response and Recovery

(1) Administration and General Disaster Assistance - provides administrative support and assistance in coordinating disaster relief organizations.

(2) State Disaster Preparedness Grants - provides grants for disaster-related programs such as response planning, systems design, and revision of statutes.

b. Plans and Preparedness, State and Local Emergency Operating Centers - provides appropriate financial assistance to state and local governments for the planning, constructing, and equipping of dual-purpose emergency operating centers.

4. Department of Health and Human Services

Public Health Service - provides grants, contracts, and technical assistance to establish and implement emergency medical services programs.

5. Small Business Administration

(Can declare disasters and must assist, when disaster areas are declared by the President, in providing relief loans to individuals and small businesses.)

6. Department of Transportation

a. National Highway Traffic Safety Administration - provides funds for the establishment and support of an EMS program to assure prompt and adequate care of accident victims.

b. Federal Aviation Administration, Airport Development Aid Program - provides grants for the fire safety in the public airport system, such as for the acquisition of crash-fire-rescue vehicles and protective clothing, and construction of garages.

7. National Transportation Safety Board

(Improves transportation safety by investigating and determining the causes of accidents.)

8. Department of Health and Human Services

Public Health Service, Emergency Medical Service - provides assistance and encouragement for the development of comprehensive EMS systems throughout the United States.

D. Administration

1. Department of Agriculture

Forest Service, Cooperative Forestry Assistance - assists in management and implementation of forestry programs, including fire prevention and control.

2. Department of Commerce

a. National Oceanic and Atmospheric Administration, National Weather Service - provides the public with weather forecasts and warnings.

b. Economic Development Administration, Economic Development for Planning Organizations - provides financial assistance in planning in a redevelopment area in order to assure the effective utilization of resources with which to create full-time permanent jobs.

3. Federal Emergency Management Agency

a. Fire Administration

(1) National Fire Incident Reporting System (NFIRS) - provides assistance to state and local governments in developing their own data systems for reporting fire incidents and casualties, which will be compatible with systems in other states.

(2) Analysis of Fire Data - provides analytical models and advice to states for analyzing and utilizing data, especially information supplied by the NFIRS.

(3) Fire Reference Service - serves as a national focal point for questions concerning fire protection and for the referral of inquiries to the appropriate sources on information.

(4) National Fire Academy - trains and educates firefighters, officers, fire educators, arson investigators, and inspectors.

(5) Technical Support Services - offers technical assistance to communities in fire protection Master Planning.

(6) Reimbursement for Costs of Firefighting on Federal Property - each fire service which engages in the fighting of a fire on property owned by the United States may file a claim for the amount of direct costs.

(7) Academy Planning Assistance Program - project grants for states to develop statewide five-year plans for fire education and training.

b. Disaster Response and Recovery, Repair or Restoration of Private Nonprofit or Public Facilities - provides financial assistance to facilities which have been damaged or destroyed by a major disaster.

c. Plans and Preparedness

(1) Emergency Management Institute (formerly Civil Defense Staff College) - provides training of instructors and key leaders in emergency preparedness.

(2) Civil Defense, State and Local Management - provides technical assistance in developing effective civil defense organizations within the states and political subdivisions. Helps prepare for disaster emergencies. Provides training for key personnel, and works closely with state and local representatives.

4. Federal Maritime Administration

(Works with port cities in training programs to improve shipboard firefighting capabilities.)

5. Department of Education

Office of Education Vocational Education - provides grants for vocational programs. Firefighting training facilities and technical or community colleges are eligible.

6. Department of Health and Human Services

Indian Health Service - involved in providing safety and fire protection training for personnel at Indian hospitals. Work is coordinated closely with the Bureau of Indian Affairs.

7. Department of Housing and Urban Development

   Community Planning and Development, Comprehensive Planning Assistance - provides effective use of resources through a broad range of planning activities.

8. National Wildfire Coordinating Group

   National Interagency Fire Training Program - provides training and national standards for firefighters, in preparation for response in emergency situations.

9. Tennessee Valley Authority

   (Offers planning assistance to promote development of resources.)

10. General Services Administration

    Federal Supply Service, Donation of Federal Surplus Personal Property - surplus items such as office furniture, equipment, supplies, and motor vehicles are donated to public agencies.

11. Department of Transportation

    Materials Transportation Bureau - reviews and analyzes reports made by the transportation industry and by field staffs which bear on compliance with the Department's centralized incident reporting system. Conducts training and educational programs to support the Department's regulatory system, and to support the program for shipper and container inspection and compliance. Coordinates departmental administration on the hazardous materials safety program, ensuring uniformity in the hazardous materials regulation of the operating administrations (including rail, highway, air, and water).

Sources of information:

1. Comptroller General. Federal Information Sources and Systems. Washington, DC. December 31, 1976.

2. Comptroller General. Federal Program Evaluations. Washington, DC. June 30, 1977.

3. Congressional Quarterly Incorporated. Washington Information Directory. Washington, DC. 1977-78.

4. National Governors' Assocation. National Emergency Assistance Programs. Washington, DC. December, 1978.

5. Office of the Federal Register, National Archives and Records Service. General Services Administration. United States Government Manual. Washington, DC. 1979-80.

6. United States Fire Administration. Report to the Congress: Arson - The Federal Role in Arson Prevention and Control. Washington, DC. August, 1979.

APPENDIX D

MASTER PLANNING QUESTIONNAIRE

MASTER PLANNING QUESTIONNAIRE

1. How long has your community been involved in the process of master planning?

2. Was a plan produced?

3. Did you receive technical assistance in the process of preparing the plan?

   a. private consultant?

   b. through USFA's Technical Support Services program?

4. How many people were involved in developing the plan and who were they?

   a. planning team -

   b. management team -

   c. advisory committee -

5. How was community involvement handled?

6. Break down the estimated costs of the plan's implementation:

   personnel -

   consultants -

   other (please specify) -

7. Does the plan cover a one-year period? five years? ten years?

8. In the process of preparing the plan:

   a. where were the most problems encountered? what were the problems?

   b. where were the least problems encountered? what were the problems?

9. What organizations/departments/agencies were involved in the:

   a. pre-planning phase?

   b. planning phase?

   c. implementation?

10. a. What techniques or strategies were used to develop the plan?

b. to implement the plan?

11. What were the alternative solutions to a particular fire problem?

12. How did you evaluate alternatives?

13. How is the evaluation and maintenance of the master plan handled?

14. What accomplishments have proven to be the most effective in reducing fire losses? (life/injuries/dollar amounts)

15. Estimate fire losses:

	life	injuries	dollar amounts
Before plan (base year)			
During planning period (base year + 1)			
After implementation (base year + 2 or 3)			

16. Do you expect you community's ISO gradings to change as a result of planning?

17. Does your master plan address:

☐	EMS	☐	communications	☐	detection/suppression
☐	water supply	☐	training	☐	hazardous materials
☐	data collection	☐	codes/inspection	☐	interface w/other agencies
				☐	other _____

18. Does your community have in effect emergency plans, other than for fire protection?

    a. If so, what are they? EMS? Hazardous materials?

    b. When were the plans developed?

19. Do you feel that there is a need for other emergency plans? (explain)

20. What is the feasibility of a comprehensive master plan, incorporating emergency and related components with the fire protection plan?

    a. What benefits could be derived from such a plan?

21. How many copies of your fire protection master plan were printed and distributed?

22. If available, please forward a sample newspaper clip publicizing the master plan.

APPENDIX E

PROCEEDINGS OF THE

TECHNICAL SUPPORT SERVICES MEETING

(Draft)

PROCEEDINGS OF THE
TECHNICAL SUPPORT SERVICES MEETING
(Draft)

December 4-5, 1979
Denver, Colorado

The Technical Support Services (TSS) Conference was held in Denver, Colorado on December 4-5, 1979 to solicit input for the Master Planning report to Congress. Representing the United States Fire Administration were Bill Holcomb, Jim Smalley, and Anita Vollmer. Members of the TSS consulting staff present were Al Grams, Mickey Jackson, G. Kenneth McAllister, William Porter, Robert A. Rathke, Kenneth D. Riley, Donald N. Tudor, Patrick Ward and Robert A. Williams.

The conference had two objectives:

1. Verification - to ensure the accuracy and validity of statements in the report to Congress.

2. Justification - to provide concrete examples of planning communities in support of the statements that are made.

In order to accomplish these objectives, TSS members were divided into three groups to discuss the following topics:

- Reasons for Master Planning
- Master Planning capabilities on local level
- Master Planning capabilities on state level
- Master Planning strategies
- Recommendation for future Master Planning program
- Master Planning as a framework for other planning

Throughout the six sessions, the three groups discussed these topics within the context of the two objectives (with particular emphasis being placed on the giving of examples). Each group was provided with an outline of the report to Congress, and the appropriate section was reviewed as it pertained to the topic under discussion. Discussion points were delineated for each topic in order to provide structure and focus for each session.

REASONS FOR MASTER PLANNING: TTS facilitators listed several reasons why Master Planning should be an integral part of the management process at both the local and state level. At the local level, these include: economics, (Proposition 13 in California was the stimulus for Master Planning in Inglewood, Pasadena); a change in the political environment (Springfield, Ill); creation of greater public awareness of the fire problem (Northwest Ark.); lower insurance rates (Springfield, Ill.); and maintenance of local control (Covina, Calif.). Reasons for planning at the state level include: coordinating the fire programs delivered by various state agencies (Oregon); establishing a resource exchange system for communities within the state (Georgia); and developing programs for fire problems which may exceed a local government's capability of handling (e.g., Connecticut has established a statewide arson task force.)

MASTER PLANNING CAPABILITIES AT THE LOCAL LEVEL: There was a concensus among TSS facilitators that the requisite planning expertise needed to develop Master Plans does not exist at the local level. It was felt that states could help overcome this problem by: providing assistance to communities in the areas of data collection and analysis (National Fire Incident Reporting System); transferring model programs from one community to another (e.g., successful arson task force program); establishing statewide standards for firefighter certifications; establishing a statewide resource exchange system; and providing a focal point for technical assistance to local government. The feelings of TSS consultants toward USFA assistance to local governments were mixed. Those TSS personnel employed by local government felt that direct interaction with USFA in obtaining Master Planning grants was desirable, while those associated with state governments expressed the feeling that Master Planning grants should be funneled through the state in order to maximize their impact and to improve coordination and communications. All were in agreement, however, that technical assistance to communities in the form of increased consulting time, publications, manuals, and workshops is essential.

MASTER PLANNING CAPABILITIES AT THE STATE LEVEL: Due to a lack of experience with state level Master Planning, it was difficult for TSS facilitators to evaluate objectively the merits of the concept. After being briefed on the pilot testing of Policy Development Assistance Program (PDAP) in four states, however, the consultants agreed that state level Master Planning needed further study and that the PDAP program possibly should be expanded. Communities could assist states in Master Planning by means of political support, input into the development of a statewide Master Plan, and the provision of model programs which could be used in other communities.

MASTER PLANNING STRATEGIES: It was felt that the most effective means of assisting communities in developing and implementing successful Master Plans would be to expand significantly the technical support services program. Further, consultants having diverse professional backgrounds (such as finance, transportation, budgeting, and legal council), should be brought into the TSS program. Follow-up assistance was another suggestion which should be given consideration in the future. Follow-up ensures that communities continue the planning process after it has been initiated. Performance evaluation mechanisms to determine the effectiveness of TSS consultants in assisting communities also need to be developed.

RECOMMENDATIONS FOR FUTURE MASTER PLANNING PROGRAM: The TSS facilitators submitted a number of recommendations for improving the quality of Master Planning. Some of these are:

- Develop example Master Plans illustrating essential methods and techniques.
- Provide small grants as seed money to communities as a means of stimulating interest in the Master Planning process.
- Provide specialized assistance and guides for the more complex aspects of Master Planning, such as data collection and analysis.

- Expand the current technical assistance program to encourage more communities to become involved in the Master Planning process.

- Encourage multi-jurisdictional/regional Master Planning (vis-a-vis USFA) by providing seed money for grants, conducting workshops, and providing technical assistance.

- Expand the current PDAP program to encourage state-level Master Planning.

MASTER PLANNING PROVIDES FRAMEWORK FOR OTHER PLANNING: Several spinoff benefits could be realized as a result of utilizing the Master Planning process; for example:

- Hazardous Materials Planning Program - A coordinated effort by various Federal agencies (FEMA, HUD, NTSB, EPA, DOT, Coast Guard, etc.) could utilize the Master Planning process to develop local, regional, and state plans to cope with hazardous materials (and wastes) problems.

- Comprehensive Communications Coordination Plan - The Master Planning process could facilitate the development of a coordinated communications system which could be used by fire, police, ambulance, Red Cross, etc., to handle large disasters more effectively. FEMA possibly could serve as the coordinating agency, with assistance from HHS, DOT, and other agencies.

APPENDIX F

TECHNICAL ASSISTANCE RECEIVED BY TWO MASTER PLANNING COMMUNITIES

TECHNICAL ASSISTANCE RECEIVED BY TWO MASTER PLANNING COMMUNITIES

The Northwest Missouri Regional Master Fire Protection Plan was authorized and directed by the Northwest Missouri Regional Council of Governments. Michael Wilson (of the Northwest Missouri Regional Council of Governments) serves as the Master Planning program director. The Master Planning Task Force was composed of representatives of the fire service, municipal water department, education, industry, medical field, et. al. Technical assistance also was obtained from a number of individuals and agencies (Missouri Forestry Service, University of Missouri, Missouri State Fire Marshal's Office, USFA, etc.) in order to improve the quality and scope of the plan.

The Springlake, Calif. Master Fire Protection Plan was developed by the Springlake Ad Hoc Committee on Fire Prevention and Control. Chief Carl Theile served as the Master Planning program director. The ad hoc committee consisted of three members from the Yolo County Planning Department; the Yolo County supervisor; and representatives from industry, insurance, the business community, et. al. Technical assistance was received from Mission Research and the Oklahoma City Fire Marshal's Office.

APPENDIX G

MASTER PLANNING FOR FIRE PROTECTION AT THE STATE LEVEL: A STATUS SURVEY

MASTER PLANNING FOR FIRE PROTECTION AT THE STATE LEVEL

A STATUS SURVEY[1]

GENERAL IMPRESSION

A Team comprised of representatives of three of the four master planning grantee states (Washington, Pennsylvania and North Carolina), the USFA and MRC visited eight states (Arkansas, Indiana, Kansas, Louisana, Michigan, New Jersey, New Mexico and North Dakota) for the purpose of a sampling assessment of the status of fire protection planning at the state level. The team found virtually no coordinated planning going on anywhere. Nevertheless each state visited seemed to feel that better and better fire protection for its citizens was being actively pursued. The team consensus was that, contrary to local enthusiasm, and with exceptions, fire protection management at the state level is in a rather sorry state.

For the most part states appear to continue to concentrate on traditional roles of code enforcement, arson investigation and firefighter training—the impact of NFPCA master planning programs does not seem to have been felt in the Nation's state capitols. What ferment was evident (there was much complacency) seemed to center on pensions and disability, code making and code enforcement, and on the role of the volunteer firefighter. More often than not funding for identifiable fire management at the state level is derived from taxes on fire insurance premiums. All states seem to focus (understandably) on the state fire marshal as the source of management and reform although fire protection functions appear to be organizationally dispersed. All states seem to generally vest the State Fire Marshal (or equivalent) with about the same powers and authority. The exercise of those powers draws the distinction between states. Strong leadership produces change (sometimes progress); complacency preserves stasis. Further, since most fire marshals are appointed, and, since, apparently the job is not considered to require consummate administrative, political or technical skills (there are certainly exceptions), incumbents tend to be retirees from relatively obscure career fire service positions. The effectiveness of the office often reflects these attributes.

Nowhere did the Team find a comprehensive body of legislation which could enable a broadly based involvement of the state in fire protection planning and management. Where effective programs were encountered (code enforcement for example) they seem to work because both the authority and the means to enforce (people) are provided in strong measure.

Politics appears to play a significant role in program development and implementation, with the volunteer firefighters (as a political entity) occupying a dominant position. Traditional values associated with training, pensions and equipment are often of principal political interest.

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[1] This report (dated 8/78), submitted to Richard Strother, Associate Administrator, USAFA, by William Hanna of Mission Research Corporation, reflects the views of Mr. Hanna and does not necessarily coincide with those held by the United States Fire Administration.

STRENGTHS AND WEAKNESSES

This section will address three general issues and a number of specific fire protection system attributes in terms of what the Team observed the states are (or are not) doing.

ISSUES

Fire Protection Needs Assessment

The Team did not observe a coordinated effort, in any state visited, to assess the status and adequacy of intra-state protection (other than for the few mandated direct responsibilities). In virtually all cases, however, there seemed to be a general feeling that fire protection is not adequate although each state was thought to be doing some things well. No state was able to quantify levels of fire protection (other than for all-paid city departments), adequacy of training (see below), adequacy of codes (see also), or the effectiveness of most of the other attributes we will discuss. In sum most state officials do not seem to know how good (or how bad) fire protection is in their states. Consequently needs are not defined—other than for the traditional "more" philosophy. There are exceptions, of course, as noted below.

Fire Protection Policy

The Team found little that would qualify as broad policy making going on in the visited states. For the most part active fire protection functions appear to continue in much the same relatively narrow vein for long periods of time, regardless of the coming and going of administrations and the periodic appointment of fire officials. In most of the states it appeared possible for rather sweeping changes to be brought about by executive order, but no great objective oriented pressure to do so seemed evident. Generally state personnel seemed content with existing policy (again with exceptions) even though all would admit that improvements could, and should, be made. Money was always cited as a problem. In most states no fire protection policy making group (with teeth) exists anyway.

Legislative Action

The Team found active fire protection related politicking in every state visited. In each case the active element appeared to be associated with the volunteer firefighters and with the welfare of that group (the vast majority of fire service personnel in every state). However, organized, administratively supported and fire protection program oriented lobbying (and consequent legislative support) seemed to be quite rare. Fire protection just doesn't appear to be an issue of great moment to governors or state legislatures.

Specific comments regarding state activity in various aspects of fire protection follow—not necessarily in priority order.

SYSTEM ATTRIBUTES

Fire Suppression

Direct state provision of fire suppression services varied from state to state, ranging from zero capability to well developed forces involved in supporting local jurisdictions as needed. In no case was a state found to provide comprehensive fire protection outside of incorporated or other areas having locally organized fire departments. Some states do, however, provide direct responses to natural fuel fires outside of incorporated areas. Generally it was found, also, that state buildings are protected by local agencies--without compensation. One state wildland fire agency was seen as a potent coordinating force to improve fire protection in the state through a broad and comprehensive multi-agency cooperative effort. Such an activist role on the part of a state is not at all common.

Fire Prevention (code enforcement)

The Team found code enforcement at the state level to vary considerably also. Examples were found of very active, progressive (in terms of code coverage) programs in state departments normally not thought to be correlated to fire protection. In contrast some state officials having code enforcement authority choose to casually delegate that responsibility to organized local fire departments or simply let the local folks decide what to do. In general code enforcement (where state codes exist) seemed relatively ineffective, particularly in unincorporated areas. Much discussion was encountered regarding the qualifications of inspectors (enforcers) with efforts to train and certify personnel evident, at varying levels of stringency, in a number of the visited states.

Regulatory Functions (codes and standards)

This fire protection subject area was found to be one of considerable interest in the states the Team visited. Virtually all (with notable exceptions) state officials seem to feel the state should at least set minimum standards although instances were found where code making is entirely a local matter (in the absence of a state code of any kind regarding fire protection). In other cases state codes appear to be preemptive, setting both maximum and minimum standards. Such codes do not appear to be popular with local jurisdictions. In general no coordinated effort to develop and promulgate codes and regulations having fire protection significance was observed. For example, state fire officials were not seen to influence intra-state commerce regulations, or codes and standards governing the provision of water supplies in unincorporated areas.

Training, Education and Certification

This was found to be an active area of interest in all of the states visited by the Team. Generally all had programs in being, or pending, to provide a high level of direct, job-related training to all firefighters (usually including volunteers). The method of delivery almost always involves the state university system with the training concentrated in a single annual event. Interest in certification also seems to be growing, with strong thrusts in all of the states visited towards certifying firefighters, instructors and inspectors. No program was found to be complete or comprehensive at present, although all of the surveyed states revealed plans to extend their certification programs. Who should certify whom was found to be a universal dilemma.

Public Education

The survey team found that most state fire officials rank public education high in importance. However, no state surveyed had other than traditional "Smokey Bear" school lecture programs in effective operation. In many cases "public education" consists of periodic school fire drills, period. In other cases the desirability of enlisting the cooperation of the teachers in classroom based programs is recognized, but even so, cohesive programs cooperatively mounted by state educational agencies and state and local fire officials are rare. Public education appears to be still largely a myth—at least at the state level.

Incident Reporting and Fire Investigation

This also is a subject of considerable interest at the state level; again, however, the team found little of significance to report. Most reporting systems are still voluntary at the local level, despite mandatory legislation—often without enforcement authority. Few officials could make authoritative statements regarding the percentage of incidents actually reported but the consensus seemed to center on 40-45 percent. There were exceptions where estimates were "confidently" 90-99 percent due to either financial rewards and punishments or enforced law. Even where reporting rates were thought to be high, and the data duly entered files (computer and other) there was no evidence of data validation nor any apparent concern over whether what was being reported was in fact what happened or whether the incidents reported represent an unbiased sample of the State's fire experience. The Team's queries regarding the occurrence of such entries as "source of heat of ignition," "first ignited material," etc. were rewarded with puzzled concern over why the entries should be questioned. Two conclusions can be postulated—NFIRS notwithstanding: (1) mandatory incident reporting is by no means universal or comprehensive despite the law and the degree to which what is reported represents statewide fire experierence is unknown (2) the accuracy of reported data may be questionable, but in any event is unknown. Nevertheless such data are treated as both accurate and comprehensive and annual reports reflect that view. Why this is so may be learned in part from what follows.

Fire investigation in the sense of applied technology (forensic or otherwise) is not widely practiced. States all seem to provide for some fire cause investigative capability—usually deployed on request by a local agency and/or when a fatality is reported. Most fire protection agencies simply do not have either the manpower or technology resources to perform effective fire investigations, nor is it possible for local agency personnel to receive and maintain the quality of training required for effective investigative performance. Further, most firefighters are effective evidence destroyers, because they must do so in the course of suppressing a fire and/or because they don't know what to preserve or how to preserve it. The net result of all of this is reason to question the accuracy of certain of the data found on incident reporting forms. Most of the state fire officials visited generally recognize the desirability of improving the performance potential of both state and local fire investigators, but few programs to do so were noted by the Team.

Inter-jurisdictional Coordination

This did not appear to be a problem area to the state fire officials queried by the Team. Most feel that inter-jurisdictional communications are good albeit by virtue of the numerous quasi-official organizations operating in their states (e.g., chiefs associations, instructors associations, lobbying groups, fireman's associations, etc.). Direct communication government-to-government appeared to be minimal, and usually had to do with the distribution of funds or the investigation of a fire. All of the states visited, however, did have some mechanism for coordinating the involvement of local agencies in disaster management--usually through the state civil preparedness agency, or its equivalent, rather than through a state fire official. Logical state/local interfaces for fire protection, such as the intra-state transport of hazardous materials, sub-state (regional) planning, or fire fighting water distribution seemed little exploited by state or local fire officials. As noted above, training coordination is an exception to this apparent gap in official communications. It should be noted, however, that there appears to be no great need for extensive inter-jurisdictional coordination since, in most of the states visited, local agencies tend to function quite autonomously and the state has little need to manipulate resources at the local level--at least under the presently prevalent concept of the state's role in fire protection for its citizens.

Planning

In no state visited by the Team was comprehensive, coordinated fire protection planning seen to be done under any official sanction. One state was seen to be developing just such a capability, as an informal coalition of interested parties-threatened by the formal state organization.

Information Dissemination

The Team was interested in the degree to which state agencies serve to maintain currency at the local level in matters of technology, regulatory measures, fire experience (incident reporting) feedback, and legal (legislative) events of interest. Here again the states were not found to play active roles in such information dissemination for the most part. However, the quasi-public associations (e.g., the fire chiefs) were often seen to fill this gap--at least in part. Nevertheless, it was both surprising and shocking to the Team to note the degree of provincialism, even in some cases, at the state level, of the fire services. It often seemed there was an active desire to remain isolated, especially from Federal funding and that what information that was disseminated was largely generated internally by and for the people who would consume it. The Team felt that this syndrome was quite serious and tends to preclude the infusion of new ideas and ways of doing things that might well, in many cases, improve the cost effectiveness of fire protection. It was interesting to note in this context, that nowhere was there seen an interest in Master Planning. This despite the fact that the states visited were chosen originally on the basis of some evidence of Master Planning elicited by questionnaires provided by the Fire Marshal's Association.

Arson Prosecution

This subject area elicited some rather diverse responses from the state officials interviewed. Most clearance rate estimates were in the 5-15% range, but a surprising few exceeded 50% and ran as high at 95%. The Team suspects some definition problems here. The lower estimates probably reflect (optimistically) the percentage of incendiary fires detected, for which a perpetrator is identified, arrested and successfully prosecuted. The higher estimates probably accurately reflect the number of cases filed which result in a conviction and attest more to the care with which cases involving an arrestee are prepared for court than to the rate at which arson fires result in convictions.

Each state visited takes an active role in arson investigation and prosecution-generally through the Fire Marshal's office. The Team observed that forensic resources were generally meager and that assigned personnel had little real chance to collect convincing evidence even when the arsonist was thought to be known (see fire investigation above). The interesting point here is that all states seem to accept responsibility for arson prosecution but have little real capability to discharge that responsibility effectively. All also admit arson is a very important fire problem.

Fire Insurance Administration

With one rather unique exception, the visiting Team noted little connection between state and private sector insurance rate setting activities, and the state's interests in fire protection. All of the states did, however, benefit (in diverse ways) from revenues derived from taxes on fire insurance premiums collected in the state. The unique program mentioned above permits a state agency to set fire insurance rates—an experiment well worth watching.

ISO remains a powerful force in fire protection at the local level in all of the states visited and was seen by the Team, in one state at least, to function as a quasi-government agency establishing rate making policy as well as estimating fire protection capability in accordance with that policy.

Major Emergency Management

This issue is apparently thought by some state officials to be quite peripheral to fire protection and largely the province of the civil defense people. In most cases, even though it is usually recognized that the fire services play a pivotal role in disaster management, no effective state level coordinating system was found to be in place. Mutual aid, in various forms, is, of course, practiced in all states at the local level and, given a disaster of sufficient magnitude, a mechanism exists which will bring federal forces to bear. The machinery appears to be quite rusty, except in those few instances where the state is actively engaged in fighting major fires on a regular basis.

Research and Development

The Team didn't find any except, perhaps, cooperative efforts with the Federal Government having to do with forest management.

Water Supplies and Water Distribution

In no case was a state found to be active in assuring the availability of adequate firefighting water supplies.

Communications

With the exception of certain wildland fire control agencies, state fire protection officials do not appear to be involved in interagency communications systems. In most states no single radio frequency, or group of frequencies is available for such purposes, although the civil defense agency generally provides a statewide frequency for its own use. Multi-agency emergency operations communications would appear to be quite difficult since a common radio frequency is generally not available to local fire departments and, when one is, the local departments seldom have the frequency on their radios.

Equipment Standards and Procurements

Procurement of firefighting equipment has long been a jealously guarded local prerogative. Only recently have states and the Federal Government intervened to promote compliance with voluntary standards for certain items of the firefighter's personal equipment. The states visited by the Team did not, for the most part, play an active role in equipment specification or procurement services. In at least one instance, however, the insurance tax revenues were made available by the state for equipment purchase by local agencies. Apparently where life safety is a factor, state officials see a role for the state in equipment management. Beyond that, economies of scale and adaptive specification development are not benefits seen to outweigh local autonomy and the right to chrome and gilt. It should be noted, however, that fire apparatus is still a source of great pride in the vast majority of local communities, who rely on voluntary contributions for purchases and on volunteers to man the apparatus.

Revenue Generation

As a unique activity, raising money for fire protection doesn't hold a high position in the spectrum of state fire official activities. For the most part supporting revenues for state agencies involved in fire protection are set by law, derived from taxes of one sort or another and are not related to services provided by the state. Funding levels seemed to be proportionate to the budgets of the agencies to which the state fire protection activities are attached; i.e., where the fire protection function is isolated or a meager part of an unrelated (and perhaps minor) agency, funding is minimal. Where the parent agency is large, strong, and highly visible, funding is likely to be more adequate.

Summary

The long list of things a state might be interested in which have some bearing on fire protection were all addressed, to a greater or lesser degree, during the intensive four hour interviews of the assembled officials in each of the eight states visited. The immediate response of the visiting Team was that there was not enough time to explore issues adequately. This feeling occasionally was acute and at other times the Team felt it had learned just about all there was to know in a matter of a few minutes--at least in part due to great inter-state similarities and resulting feelings of deja vu. Sometimes the only differences in the answers to questions were perceived on an "if this is Tuesday we must be in New York" (the Team did not visit New York) rather than on anything really different and interesting about the way the state was going about its fire protection business. There were a few very happy surprises though, which established that a state can do almost anything it desires given the right prime mover and a persuasive idea. It is these latter instances which gave the Team a consensus feeling that the state can play a significant role in fire protection and that such a role is worth planning for.

Potential for Planning

On the face of the evidence gathered by the visiting Team the climate for comprehensive and effective fire prevention and control planning at the state level does not appear to be favorable for a number of reasons, chief of which seems to be neither governors' offices nor state legislatures appear to feel fire protection is very important in comparison with other pressing winds and seas which beset the ship of state. Most of the other problems really stem from this central issue--nobody really cares. Nevertheless, some of the more immediately visible impediments to planning might be mentioned:

- Responsibility for fire protection at the state level is incomplete, unclear, uncoordinated, statutorily weak or all of the above.

- Appointed state level officials tend to have been small town fire chiefs--good at their work but not experienced in planning or high level, complex administration.

- Funding provided for fire protection functions is meager at best, is often absent (although a mandate may legally exist) or is so constrained as to limit the potential for change.

Despite these seemingly fatal maladies, significant programs in virtually all of the functional areas listed earlier in this report are to be found alive and well. Examples include the Texas insurance rebate program, the New Jersey code program and the Michigan code enforcement program. If, in fact, all such programs could be implemented in one state a very impressive and comprehensive fire protection system would emerge--one that would effectively integrate state and local activities without (mostly) loss of local autonomy. Unfortunately more than one such program is seldom found in any one state.

One might surmise, however, that since each such program came to pass despite the kinds of obstacles enumerated above, each must satisfy the criterion for effectiveness: statutory basis, sufficient competent and motivated personnel adequate funding. Each then proves the potential for planning and implementing effective programs, which also implies that functional areas not yet represented are fair and challenging game for planners and implementers.

Why has no comprehensive program yet emerged in some states? The reason is likely that programs, like causes, have champions who work tirelessly to put them into operation. Planning, the activity necessary to integrate programs, has no such charismatic individuals, for planning itself is not a cause. Further, professional planners who can wax enthusiastic about fire protection probably do exist though they are seldom found in state governments because they serve no obviously useful purpose. So the climate is lousy but the potential is great.

Recommendations

At this juncture and in the absence of definitive experience (to be developed by the grantee states) some recommendation-like observations may nevertheless be useful. They are offered in random order.

- Legislators, other elected officials and fire protection people can identify with programs but are wary of plans. It may be best to do planning in the dark-of-the-moon and emerge with a set of programs which, in fact implement the plans but not obviously so.

- No program, no matter how desirable, cost-effective and otherwise important will be launched and sustained successfully without a champion--in the legislature, the governor's office, some state agency, or the local fire services. When you have identified programs look for willing and eager champions to poke, prod, push, wheedle, drag and otherwise make them happen.

- Even with programs and champions some orchestration is necessary lest your protagonists struggle with each other rather than the forces of adversity. Hence another kind of plan and planning is required-an implementation strategy. What is first, what is last and how are events arranged in between. Who are the actors and what are their interests. And what makes good timing. This is politics and requires a different kind of "planner."

The development of a fire protection plan seems to be the easy part. It can be done idealistically and incorporate everything one might desire:

- The education of new generations of fire-safe citizens

- A fire safe environment brought about by effective control of structures and materials

- Instantly responsive fire detection and suppression

- A largely self-supporting fire protection system based on user--derived revenues and positive feedback of the benefits of improving fire safety.

Each of these concepts hosts a myriad of possible programs each of which is feasible unto itself. The aggregate of such programs is probably not feasible as an "all-at-once-and-nothing-first" assault on fire protection--for fiscal political, personnel and other mind boggling reasons. However, a phased implementation which orders the programs in terms of cost, payoff, political sensitivity, etc. is likely to be feasible in any state. The trick is to plan the implementation of each program as though it were a political campaign--with all of the attendant lobbying, pursuasion, arm-twisting, kicking and screaming and other useful devices to: get the right man, get an authoritative statutory base, line up the perpetual financing, make an appropriate organizational slot (as high as possible). When you've done all of this you're ready to announce the program, launch it and go on to the next one. However, the conductor (planner) is not finished with any program just because it is implemented--survival depends on continuous positive feedback. The virtues of the program must be measured and made visible, especially to the administration and legislature. If the feedback is negative the problem must be summarily dealt with. In other words measures of effectiveness must be built into each program and conscientiously monitored. There is more public virtue in courageously killing or restructuring a program than in letting some investigative reporter locate it languishing in the city dump quietly consuming tax dollars.

APPENDIX H
MASTER PLANNING EVALUATION CRITERIA
(Draft)

MASTER PLANNING
EVALUATION CRITERIA
(Draft)

	PHASE		
	I	II	III
I. Resource Utilization Through Coordination (the Process)			
A. Commitment from local government			
1. Allocation of planning resources (personnel/monetary)	•	•	•
2. Policy support for Master Planning from city government			
a. Approval of Master Planning concept/need	•		
b. Approval of plan		•	
c. Implementation of plan		•	•
B. Multi-Agency involvement to provide for increased coordination between the fire department and other community agencies			
1. Participation of other city departments on planning team	•	•	•
2. Evidence of improved coordination between city departments		•	•
3. Evidence of improved coordination with other jurisdictions	•	•	•
C. Community involvement to provide mechanisms to ensure community-wide input in Master Planning decisions, and citizen support for improved fire protection measures			
1. Public support for Master Planning effort	•	•	•
2. Participation of private sector on Advisory Committee: involvement of appropriate representatives from private sector for Advisory Committee (schools; industry; insurance; hospitals/medical care; civic groups; neighborhood groups; others as appropriate: architects, engineers, contractors, etc.)		•	
3. Allocation of resources by private sector	•	•	•

	PHASE		
	I	II	III
II. Implementation of Technical Options (Plan Development)			
A. Prevention			
1. Codes and standards			
a. Institution of or increase in home safety through legislation requiring built-in fire protection systems, such as residential sprinklers or smoke detectors		•	•
b. Introduction of special incentives, such as tax credits to amortize the cost of installing home sprinkler systems, etc., where not required by local fire codes		•	•
c. Adoption of automatic fire protection ordinances to protect outlying areas or areas outside the city limits		•	•
d. Adoption and modification of codes, such as requiring that all buildings over 10,000 sq. ft. be sprinklered		•	•
e. Establishment of provisions to protect institutionalized citizens (young, elderly, infirm) by requiring safety programs, such as emergency survival and basic EMS		•	•
f. Initiation of programs to obtain citizen support for fire safety legislation	•	•	•
2. Inspections and plans review			
a. Increased inspection of and code enforcement in residential and non-residential occupancies		•	•
b. Elimination of hazardous buildings (abandoned building or fire traps) by requiring demolition or renovation		•	•
c. Improvement of the quality of fire inspections by providing increased training to building and fire inspectors		•	•
d. Provision of fire code information to architects, engineers, and developers, delineating the fire protection requirements for buildings in the community		•	•

	PHASE		
	I	II	III
3. Public Education			
a. Increased emphasis on fire safety programs for special occupancies, such as bulk oil storage plants		•	•
b. Institution of or increases in fire safety educational programs which provide information on the benefits of home sprinkler and smoke detector systems		•	•
c. Increased publication and dissemination of fire safety education materials to the general public on topics such as the hazards of flammable liquids		•	•
d. Development of information on building safety requirements to serve as a guide for architects and engineers in their design of buildings		•	•
e. Development of fire safety programs tailored to the unique problems of various types of occupancies such as industrial, institutional, educational, etc.		•	•
f. Establishment of programs for greater citizen awareness and support of the local fire protection system		•	•
g. Increased use of fire stations as focal points for public education, public services, and information	•	•	•
4. Arson			
a. Increase the number of fire investigations (arson) and convictions		•	•
b. Creation of arson task force involving the district attorney, fire department, police department, etc. to improve the results obtained from arson investigations		•	•
c. Reduction of arson for profit incentives by requiring the demolition or renovation of hazardous buildings		•	•
d. Establishment of arson awareness programs to stimulate citizen interest and concern		•	•
e. Creation of arson hot lines to facilitate the acquisition of information on arson fires		•	•

	PHASE		
	I	II	III
B. Suppression (any activity—with the express purpose of minimizing loss of life and property from fire—taken when fire prevention activities have not or cannot prevent fires)			
1. Fire department staffing			
a. Evaluation of shifts in ratio of volunteer to paid service, or vice versa, to achieve a better fire-loss management system		•	•
b. Utilization of technologies such as rapid water and automatic flow control nozzles to reduce staffing levels through increased firefighter productivity		•	•
2. Station location			
a. Reduction in capital outlay expenditures for new stations by requiring all buildings that exceed a designated response time to have built-in protection systems		•	•
b. Initiation of or increase in fire protection services by strategically locating fire stations in previously unprotected areas outside city or town limits		•	•
3. Communications			
a. Improvements of fire dispatch and communications by utilizing computer technology, such as CAD systems and automatic dispatching		•	•
b. Improvement of fire ground management through use of improved technology, such as portable radios to improve coordination of emergency resources at the fire scene		•	•
C. Emergency Response (activities following an emergency or disaster which require fire department resources to minimize casualities and property damage)			

	PHASE		
	I	II	III
1. Emergency Medical Services (EMS)			
a. Provision of emergency medical services or improvement of the existing EMS system in a community		•	•
b. Improvement of other medical services in the community, such as burn care units in a local hospital		•	•
2. Hazardous Materials			
a. Proper handling of transportation of hazardous materials through training and strict enforcement of codes		•	•
b. Improved availability of data in a hazardous materials emergency		•	•
c. Improved definition of emergency responsibilities		•	
3. Disaster Preparedness			
a. Planning for response to natural disasters (tornados, earthquakes, tsunami, wildfire) and disasters such as aircraft crashes, railroad disasters, and nuclear attack		•	
b. Training of personnel for response, and establishing shelter for affected persons		•	•
D. Administration (the management and allocation of financial and personnel resources in a manner which maximizes the effectiveness of the fire protection delivery system)			
1. Data			
a. Establishment of a data system or improvement of existing systems to facilitate better use of data	•	•	•
b. Familiarization with other data sources, such as weather forecasting services	•	•	•
2. Financing			
a. Establishment of a cost-effective system to provide adequate fire protection to the community		•	•

	PHASE		
	I	II	III
b. Development of a more equitable system for sharing fire protection costs with the private sector		•	•
3. Management Systems			
a. Establishment and maintenance of a system in which community fire protection needs and the delivery of services are continually evaluated; and establishment of goals and objectives to meet the changing needs		•	•
b. Expansion of services to include areas outside of the corporate limits. Establishment of cooperation between jurisdiction for provision of fire protection services		•	•
4. Personnel management			
a. Commitment of fire department personnel resources to the Master Planning project	•	•	•
b. Provision of training programs or improvement of existing training programs for personnel in planning, management, suppression, and fire prevention		•	•
c. Improvement of staffing patterns, perhaps involving a shift in the ratio of paid/volunteer; utilization of affirmative action programs		•	•
d. Improvements in firefighter safety (improvement of equipment and establishment procedures leading to decrease in the number and severity of accidents)		•	•
III. Improved Fire and Emergency Management (Plan Implementation)			
A. Improved cost/service ratio through better coordination		•	•
B. Shift in fire protection costs from public to private sector		•	•
C. Reduced insurance costs		•	•
D. Reduced fire losses			•

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